

**802.11ac (VHT20) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT1	ANT 2				
5180	0.84	1.11	0.18	4.17	9.03	PASS
5220	1.33	0.85		4.29		
5240	1.50	1.27		4.58		
5260	5.62	0.98		7.08		
5300	5.94	1.44		7.44		
5320	6.14	1.72		7.66		
5500	3.33	6.19		8.18		
5600	3.29	6.56		8.42		
5720	4.65	0.15		6.15		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT1	ANT 2				
5720	1.97	4.96	0.18	6.91	28.03	PASS
5745	1.95	4.88		6.85		
5785	1.97	4.73		6.76		
5825	2.01	5.01		6.95		
Note: Directional gain = 4.96dBi +10log(2) = 7.97dBi>6dBi, so the limit shall be reduced to 11-(7.97-6) = 9.03dBm for 5.18-5.24GHz, 5.260-5.320GHz, 5.500-5.720GHz band and reduced to 30-(7.97-6) = 28.03dBm for 5.745-5.825GHz band.						

B.Test Plot:



(Channel 36, 5180MHz, 802.11ac (VHT20), ANT 2)



(Channel 44, 5220MHz, 802.11ac (VHT20), ANT 2)



(Channel 48, 5240MHz, 802.11ac (VHT20), ANT 2)



(Channel 52, 5260MHz, 802.11ac (VHT20), ANT 2)



(Channel 60, 5300MHz, 802.11ac (VHT20), ANT 2)



(Channel 64, 5320MHz, 802.11ac (VHT20), ANT 2)



(Channel 100, 5500MHz, 802.11ac (VHT20), ANT 2)



(Channel 120, 5600MHz, 802.11ac (VHT20), ANT 2)



(Channel 144, 5720MHz, 802.11ac (VHT20), ANT 2)



(Channel 144, 5720MHz, 802.11ac(VHT20), ANT 2)



(Channel 149, 5745MHz, 802.11ac (VHT20), ANT 2)



(Channel 157, 5785MHz, 802.11ac (VHT20), ANT 2)



(Channel 165, 5825MHz, 802.11ac (VHT20), ANT 2)

**802.11ac (VHT40) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSP (dBm/MHz)		Duty Factor	Total PPSP (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT1	ANT 2				
5190	-2.22	0.40	0.35	2.64	9.03	PASS
5230	-1.68	0.47		2.89		
5270	2.66	4.67		7.14		
5310	2.95	4.66		7.25		
5510	0.03	3.11		5.20		
5630	0.75	3.89		5.96		
5710	1.68	4.71		6.81		
Frequency (MHz)	Measured PPSP (dBm/500KHz)		Duty Factor	Total PPSP (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT1	ANT 2				
5710	-1.20	1.77	0.35	3.89	28.03	PASS
5755	-1.06	1.82		3.97		
5795	-1.17	1.78		3.91		
Note: Directional gain = 4.96dBi +10log(2) = 7.97dBi>6dBi, so the limit shall be reduced to 11-(7.97-6) = 9.03dBm for 5.18-5.24GHz, 5.260-5.320GHz, 5.500-5.720GHz band and reduced to 30-(7.97-6) = 28.03dBm for 5.745-5.825GHz band.						



B.Test Plot:



(Channel 38, 5190MHz, 802.11ac (VHT40), ANT 2)



(Channel 46, 5230MHz, 802.11ac (VHT40), ANT 2)



(Channel 54, 5270MHz, 802.11ac (VHT40), ANT 2)



(Channel 62, 5310MHz, 802.11ac (VHT40), ANT 2)



(Channel 102, 5510MHz, 802.11ac (VHT40), ANT 2)



(Channel 126, 5630MHz, 802.11ac (VHT40), ANT 2)



(Channel 142, 5710MHz, 802.11ac (VHT40), ANT 2)



(Channel 142, 5710MHz, 802.11ac (VHT40), ANT 2)



(Channel 151, 5755MHz, 802.11ac (VHT40), ANT 2)



(Channel 159, 5795MHz, 802.11ac (VHT40), ANT 2)

**802.11ac (VHT80) Mode****A.Test Verdict:**

Frequency (MHz)	Measured PPSD (dBm/MHz)		Duty Factor	Total PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
	ANT1	ANT 2				
5210	-6.56	1.32	0.67	2.65	9.03	PASS
5290	-5.89	1.18		2.63		
5530	-8.83	-0.32		0.92		
5610	-8.16	0.25		1.51		
5690	-7.20	1.22		2.47		
Frequency (MHz)	Measured PPSD (dBm/500KHz)		Duty Factor	Total PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
	ANT A	ANT B				
5690	-9.33	-1.54	0.67	-0.20	28.03	PASS
5775	-9.11	-1.67		-0.28		

Note: Directional gain = $4.96\text{dBi} + 10\log(2) = 7.97\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (7.97 - 6) = 9.03\text{dBm}$ for 5.18-5.24GHz, 5.260-5.320GHz, 5.500-5.720GHz band and reduced to $30 - (7.97 - 6) = 28.03\text{dBm}$ for 5.745-5.825GHz band.

B.Test Plot:

(Channel 42, 5210MHz, 802.11ac (VHT80), ANT 2)



(Channel 58, 5290MHz, 802.11ac (VHT80), ANT 2)



(Channel 106, 5530MHz, 802.11ac (VHT80), ANT 2)



(Channel 122, 5610MHz, 802.11ac (VHT80), ANT 2)



(Channel 138, 5690MHz, 802.11ac (VHT80), ANT 2)



(Channel 138, 5690MHz, 802.11ac (VHT80), ANT 2)



(Channel 155, 5775MHz, 802.11ac (VHT80), ANT 2)



2.6. Frequency Stability

2.6.1. Requirement

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

2.6.2. Test Procedure

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 5°C to 40°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

2.6.3. Test Result

U-NII-1 (Ch. 36) 5180MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	11.07	+20(Ref)	22	4.247
100%		-30	30	5.792
100%		-20	28	5.405
100%		-10	25	4.826
100%		0	24	4.633
100%		+10	21	4.054
100%		+20	20	3.861
100%		+30	22	4.247
100%		+40	25	4.826
100%		+50	24	4.633
115%	12.60	+20	27	5.212
85%	9.41	+20	31	5.985



U-NII-2A (Ch. 52)				
5260MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	11.07	+20(Ref)	19	3.612
100%		-30	23	4.373
100%		-20	26	4.943
100%		-10	28	5.323
100%		0	18	3.422
100%		+10	17	3.232
100%		+20	20	3.802
100%		+30	25	4.753
100%		+40	31	5.894
100%		+50	25	4.753
115%	12.60	+20	19	3.612
85%	9.41	+20	21	3.992

U-NII-2C (Ch. 100)				
5500MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	11.07	+20(Ref)	20	3.636
100%		-30	26	4.727
100%		-20	30	5.455
100%		-10	29	5.273
100%		0	22	4.000
100%		+10	18	3.273
100%		+20	23	4.182
100%		+30	30	5.455
100%		+40	33	6.000
100%		+50	25	4.545
115%	12.60	+20	27	4.909
85%	9.41	+20	30	5.455



U-NII-3 (Ch. 149) 5745MHz				
VOLTAGE (%)	POWER (VDC)	TEMP (°C)	Fre. Dev. (kHz)	Deviation (ppm)
100%	11.07	+20(Ref)	20	3.481
100%		-30	24	4.178
100%		-20	23	4.003
100%		-10	21	3.655
100%		0	31	5.396
100%		+10	22	3.829
100%		+20	24	4.178
100%		+30	25	4.352
100%		+40	27	4.700
100%		+50	28	4.874
115%	12.60	+20	31	5.396
85%	9.41	+20	30	5.222

2.7. Conducted Emission

2.7.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

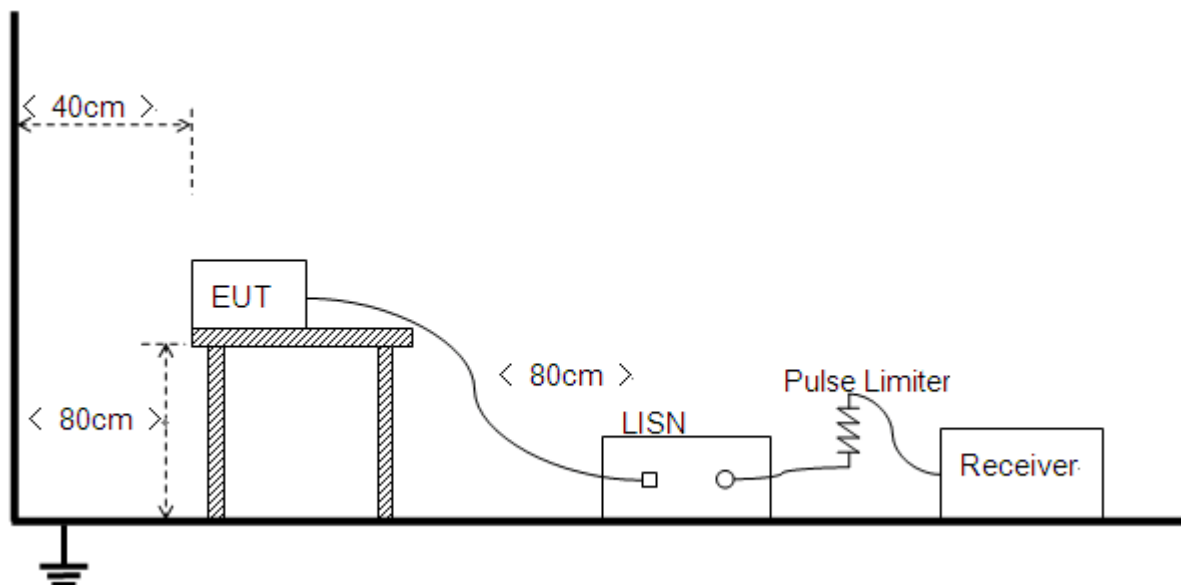
Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.7.2. Test Description

Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.



2.7.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and Plot below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+Adaptor +WIFI TX

Test Voltage: AC 120V/60Hz

The measurement results are obtained as below:

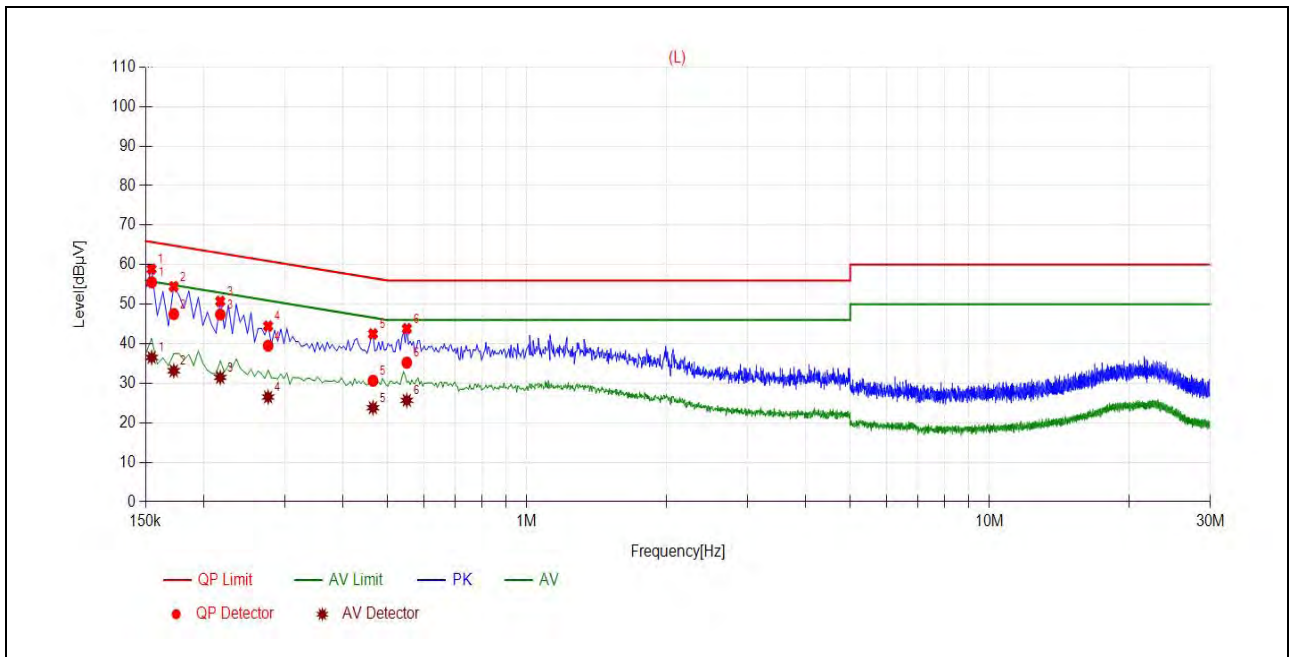
$$E [\text{dB}\mu\text{V}] = U_R + L_{\text{Cable loss}} [\text{dB}] + A_{\text{Factor}}$$

U_R : Receiver Reading

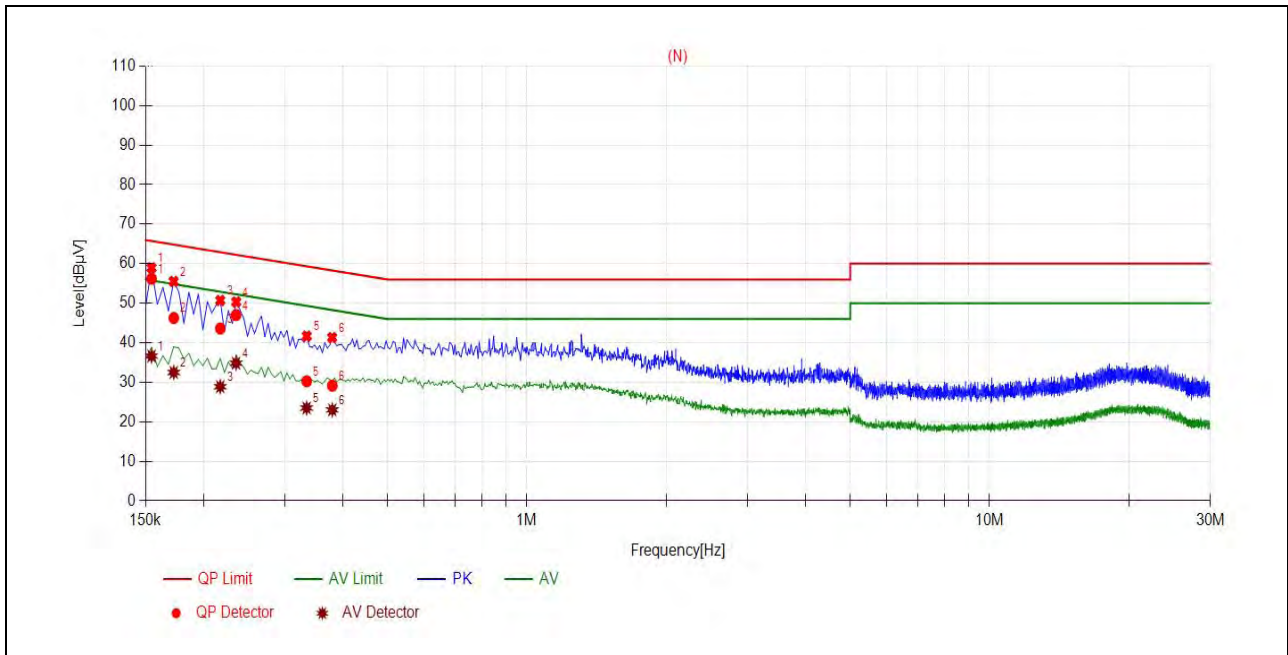
A_{Factor} : Voltage division factor of LISN



B.Test Plot:



No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1546	55.54	36.53	65.75	55.75	Line	PASS
2	0.1726	47.51	33.17	64.83	54.83		PASS
3	0.2175	47.39	31.49	62.91	52.91		PASS
4	0.2760	39.50	26.52	60.94	50.94		PASS
5	0.4650	30.65	23.80	56.60	46.60		PASS
6	0.5503	35.21	25.67	56.00	46.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1545	56.20	36.62	65.75	55.75	Neutral	PASS
2	0.1726	46.27	32.48	64.83	54.83		PASS
3	0.2175	43.61	28.88	62.91	52.91		PASS
4	0.2353	47.01	34.83	62.26	52.26		PASS
5	0.3343	30.26	23.48	59.34	49.34		PASS
6	0.3798	29.15	23.00	58.28	48.28		PASS

2.8. Restricted Frequency Bands

2.8.1. Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band:
 - (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m



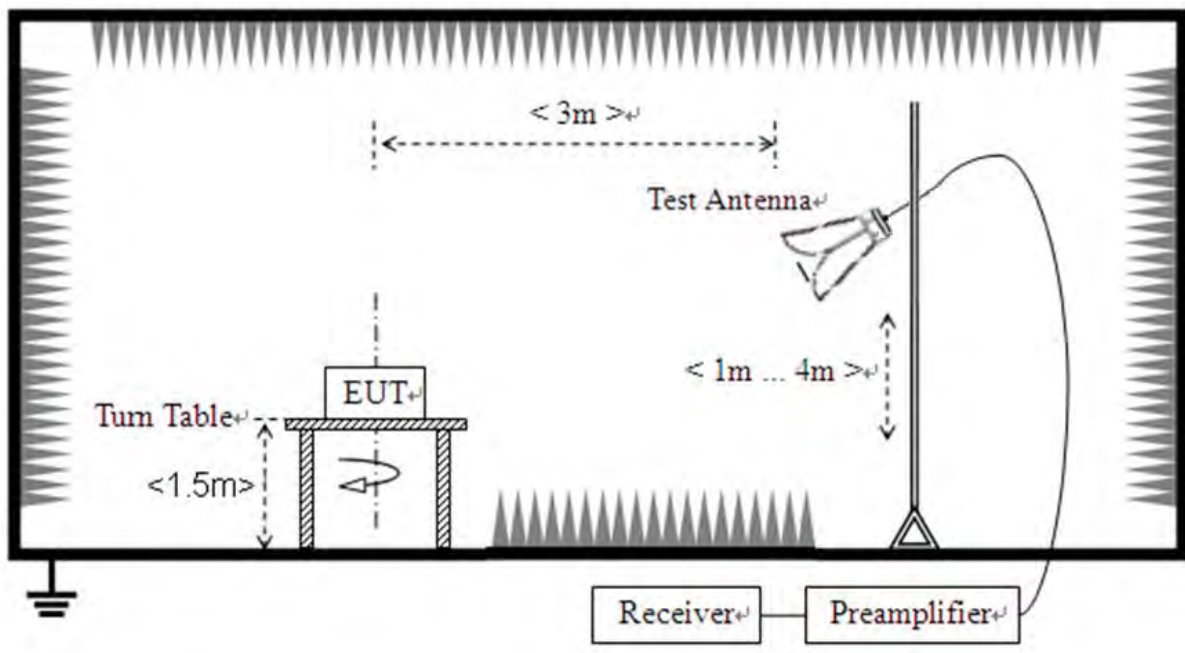
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

2.8.2. Test Description

Test Setup





The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

2.8.3. Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.

The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V/m]} = U_R + A_T + A_{\text{Factor}} \text{ [dB]}; A_T = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

A_T : Total correction Factor except Antenna; U_R : Receiver Reading

G_{preamp} : Preamplifier Gain; A_{Factor} : Antenna Factor at 3m

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

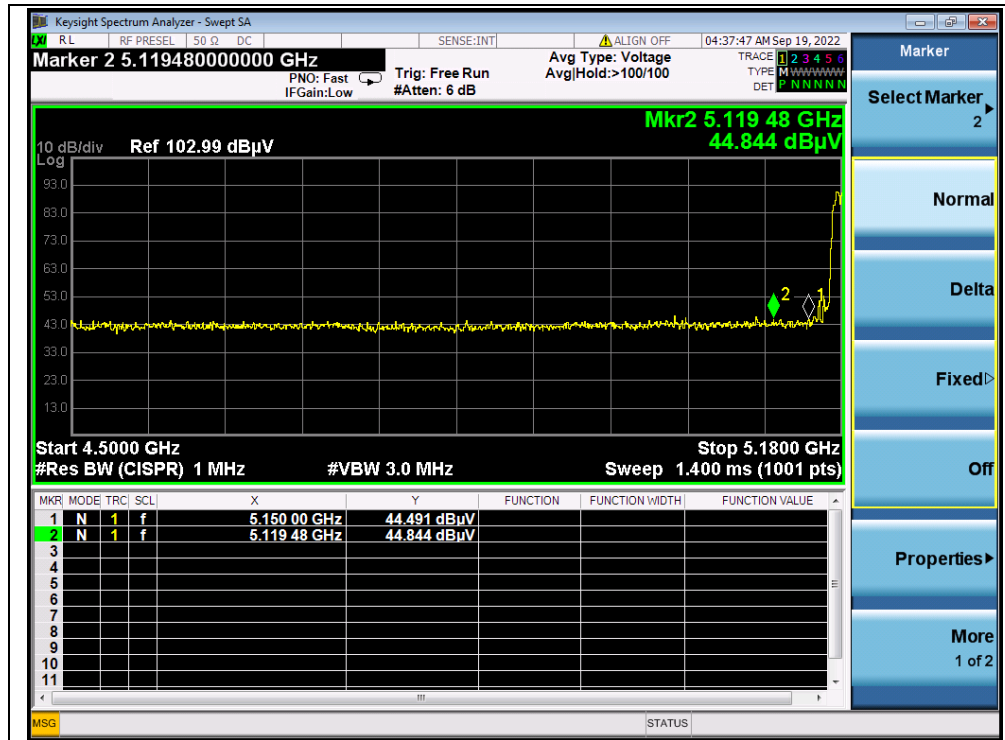
802.11a Mode

A.Test Verdict:

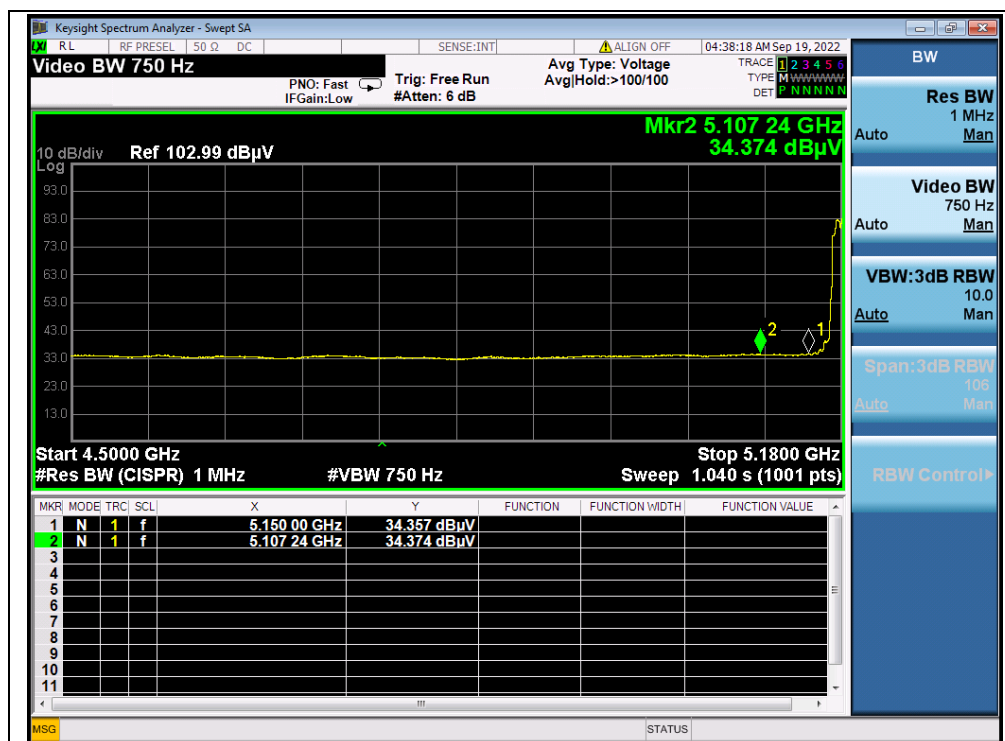
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
36	5119.48	PK	44.84	-19.54	32.20	57.50	74	PASS
36	5107.24	AV	34.37	-19.54	32.20	47.03	54	PASS
64	5352.18	PK	42.96	-18.80	32.20	55.62	74	PASS
64	5350.00	AV	33.38	-18.80	32.20	46.04	54	PASS
100	5470.00	PK	45.90	-19.20	32.20	59.09	68.23	PASS
100	5470.00	AV	34.72	-19.20	32.20	47.91	54	PASS
144	5726.40	PK	49.29	-19.20	32.20	62.29	68.23	PASS
149	5725.00	PK	57.78	-19.01	32.20	70.97	122.23	PASS
165	5850.00	PK	49.14	-19.01	32.20	62.33	122.23	PASS



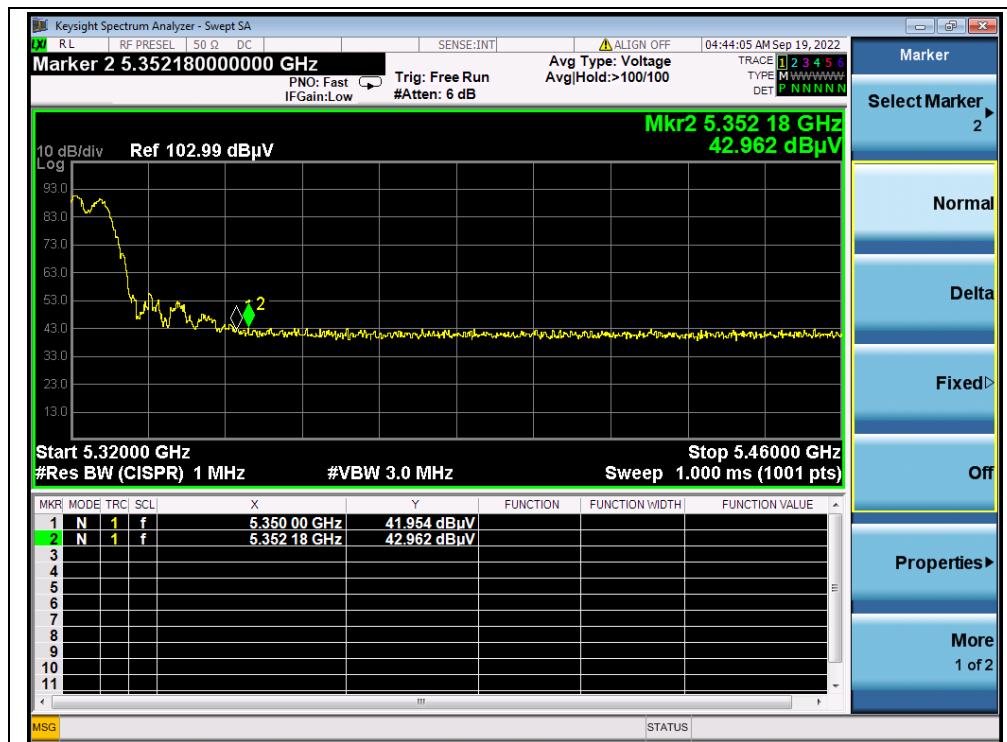
B.Test Plot:



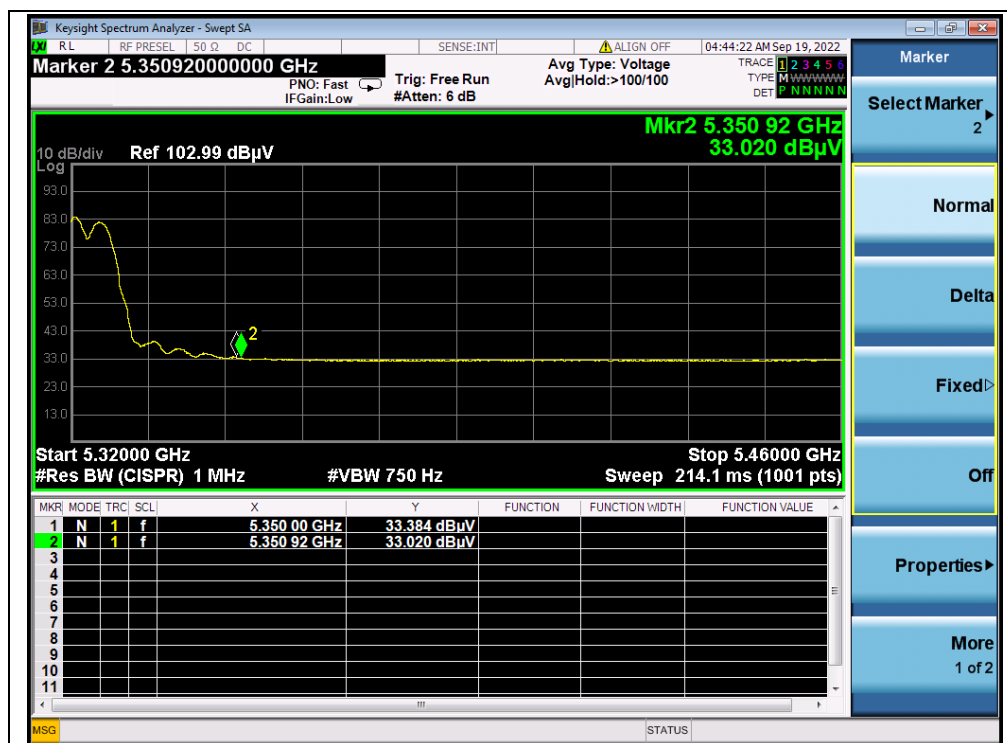
(PEAK, Channel 36, 802.11a)



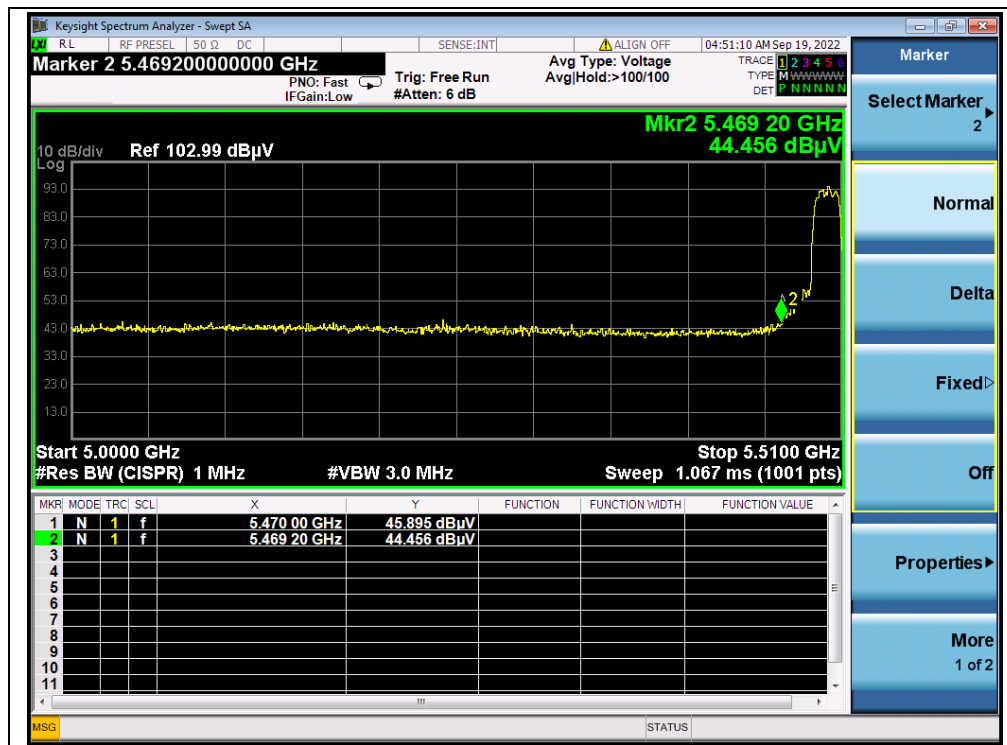
(AVERAGE, Channel 36, 802.11a)



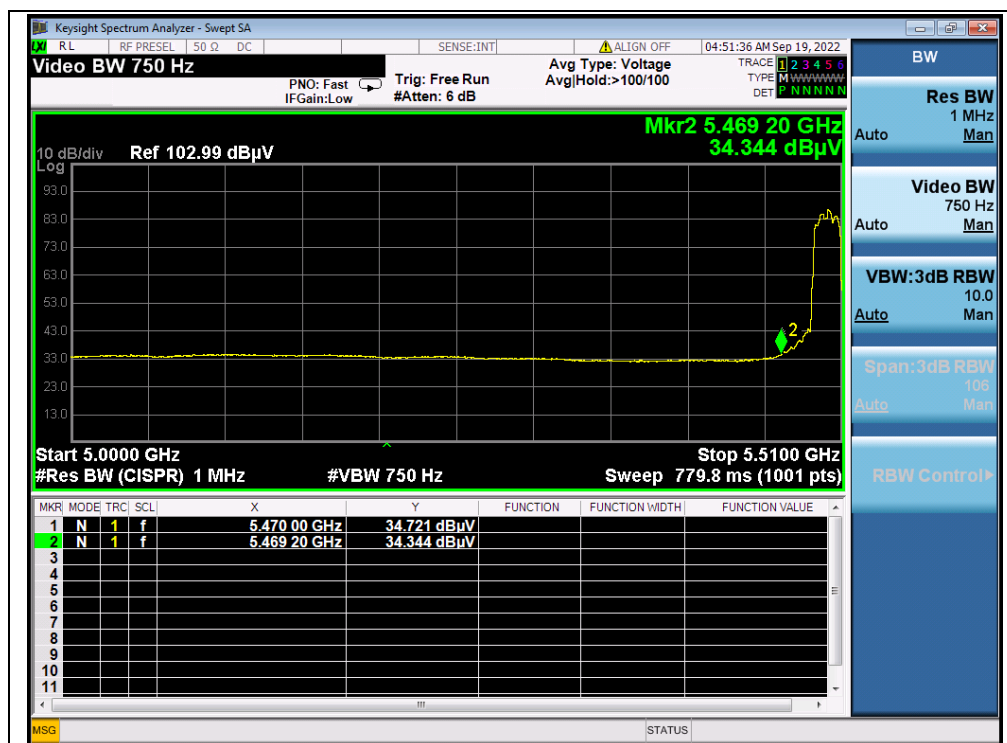
(PEAK, Channel 64, 802.11a)



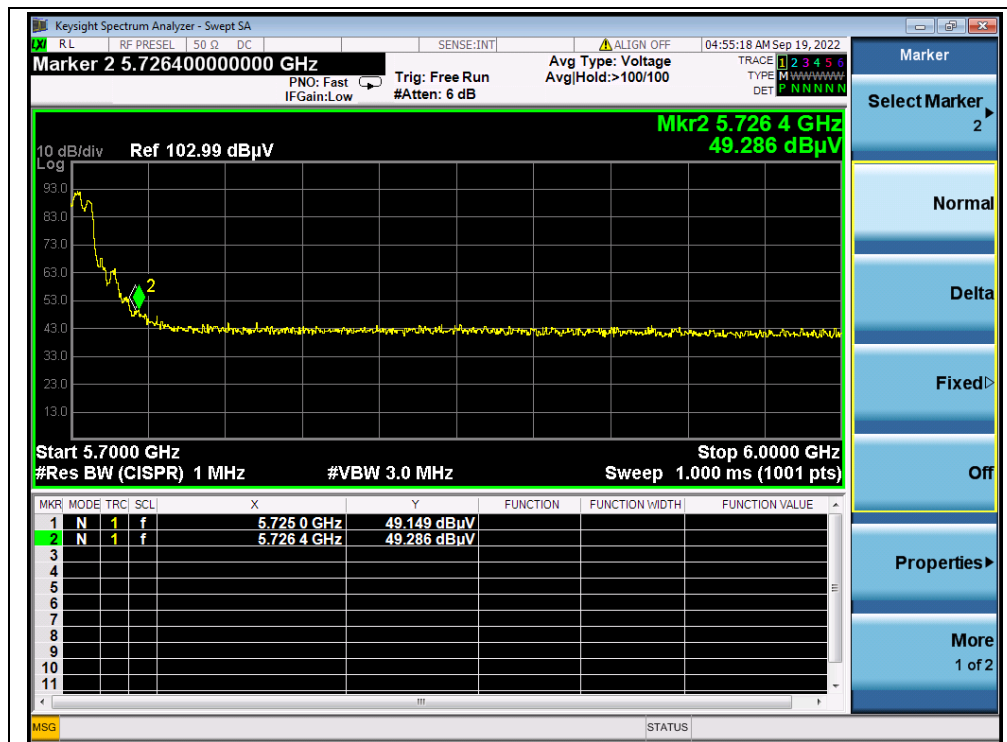
(AVERAGE, Channel 64, 802.11a)



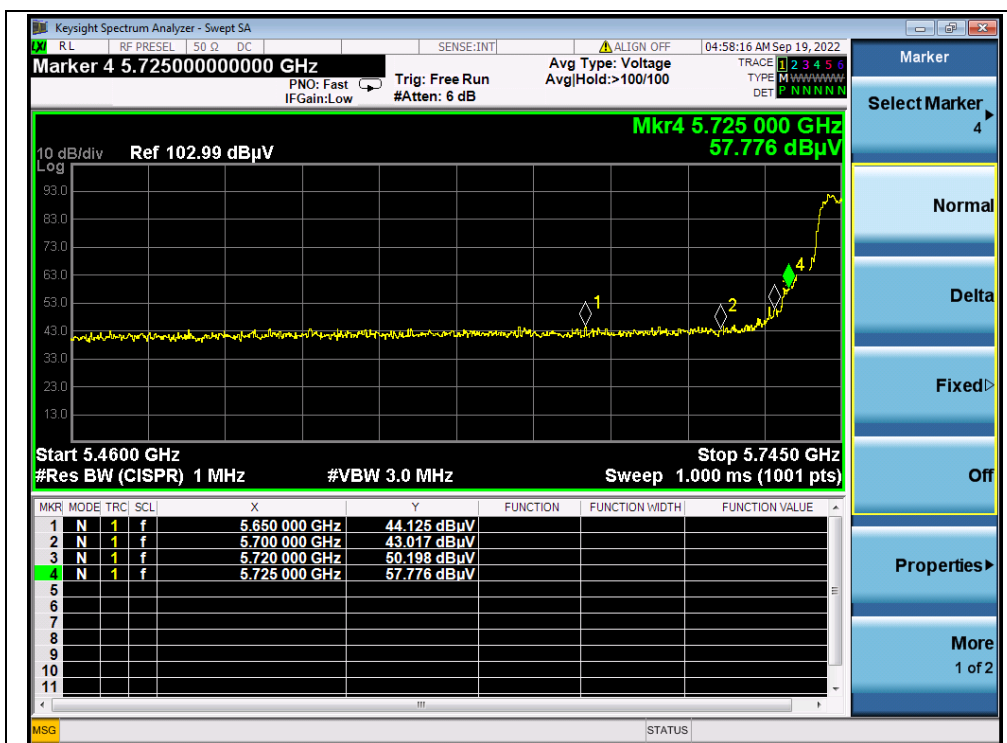
(PEAK, Channel100, 802.11a)



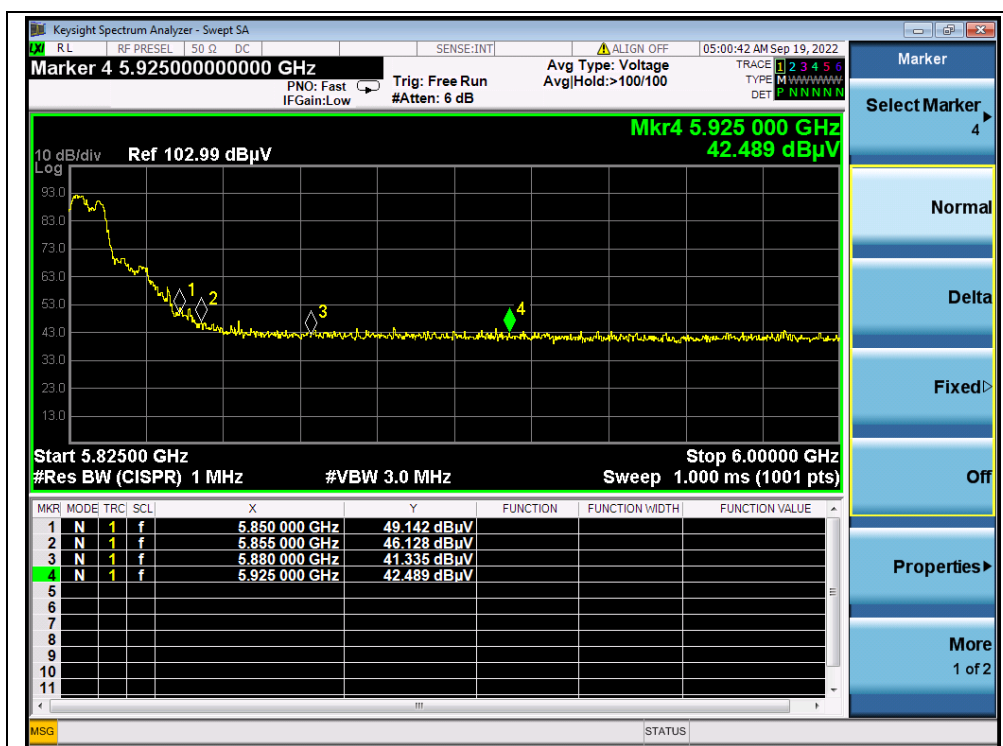
(AVERAGE, Channel 100, 802.11a)



(PEAK, Channel 144, 802.11a)



(PEAK, Channel 149, 802.11a)

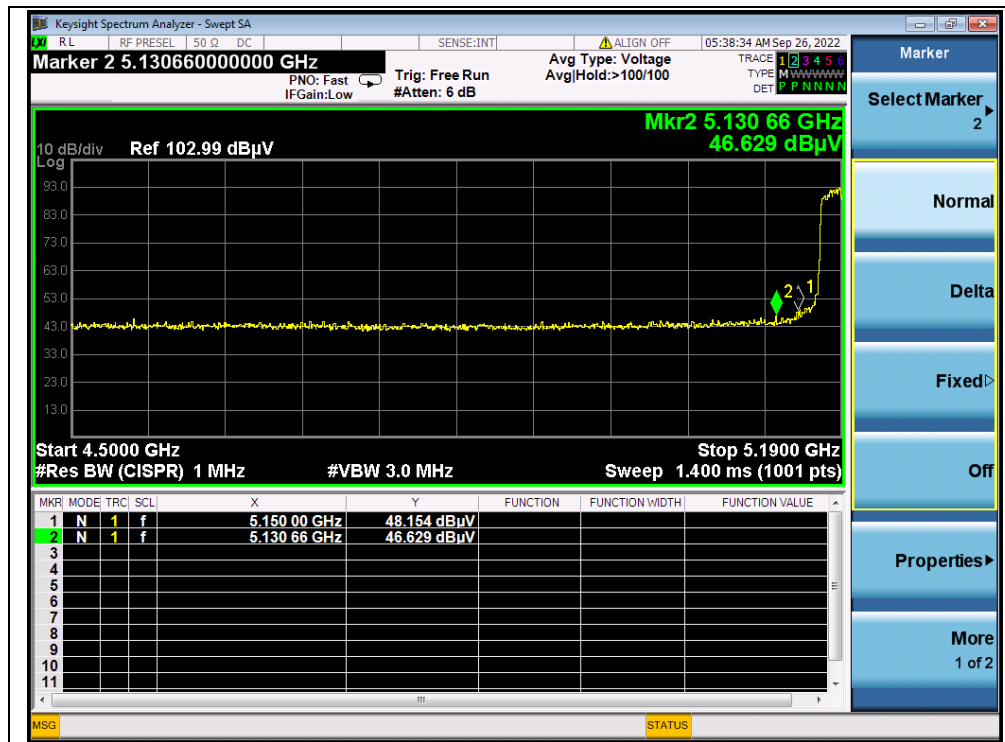


**802.11n (HT40) Mode****A.Test Verdict:**

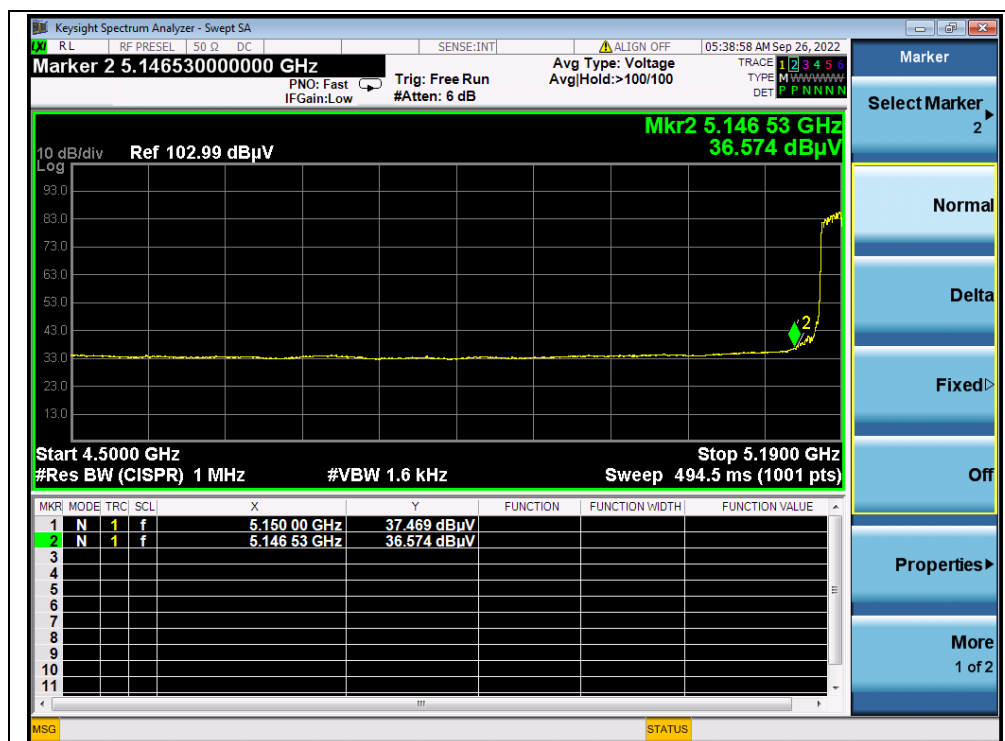
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
38	5150.00	PK	48.15	-19.54	32.20	60.81	74	PASS
38	5150.00	AV	37.47	-19.54	32.20	50.13	54	PASS
62	5354.16	PK	53.68	-18.80	32.20	66.34	74	PASS
62	5350.10	AV	38.60	-18.80	32.20	51.26	54	PASS
102	5460.35	PK	50.53	-19.20	32.20	63.72	68.23	PASS
102	5470.00	AV	37.73	-19.20	32.20	50.92	54	PASS
142	5726.10	PK	48.93	-19.20	32.20	61.93	68.23	PASS
151	5725.00	PK	61.52	-19.01	32.20	74.71	122.23	PASS
159	5855.00	PK	43.35	-19.01	32.20	56.54	110.83	PASS



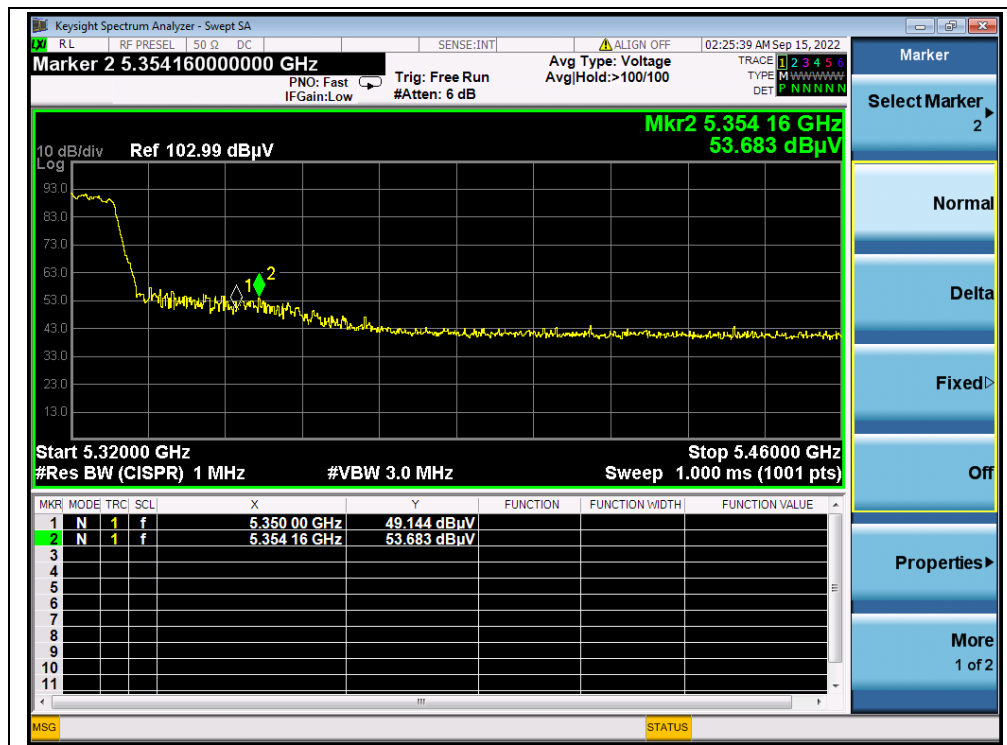
B.Test Plot:



(PEAK, Channel 38, 802.11n (HT40))



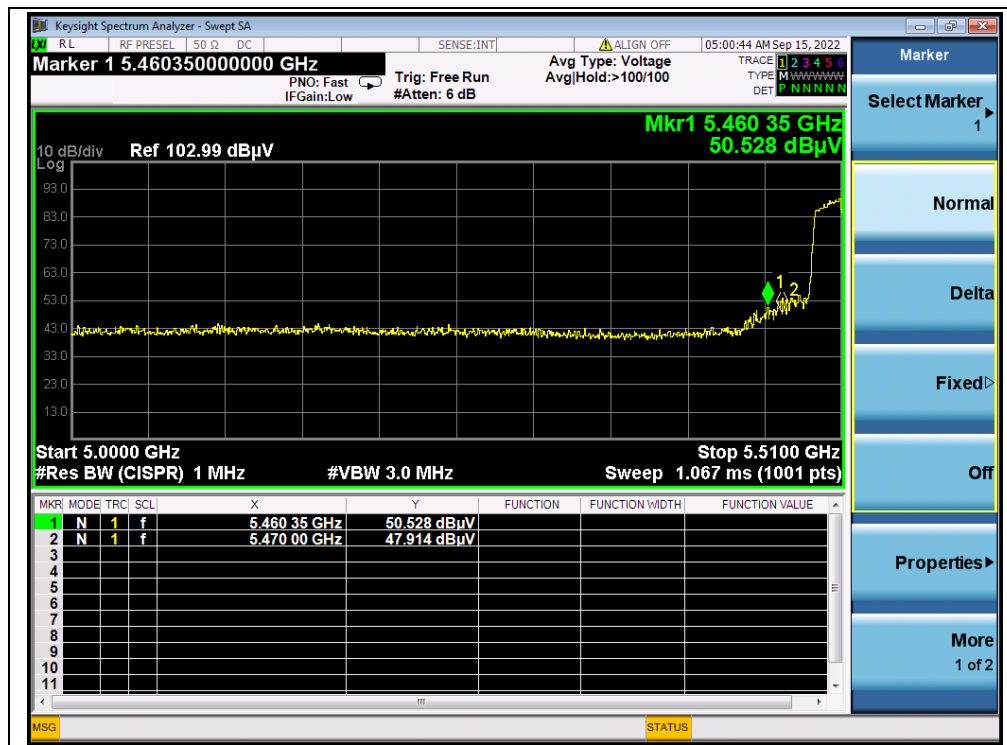
(AVERAGE, Channel 38, 802.11n (HT40))



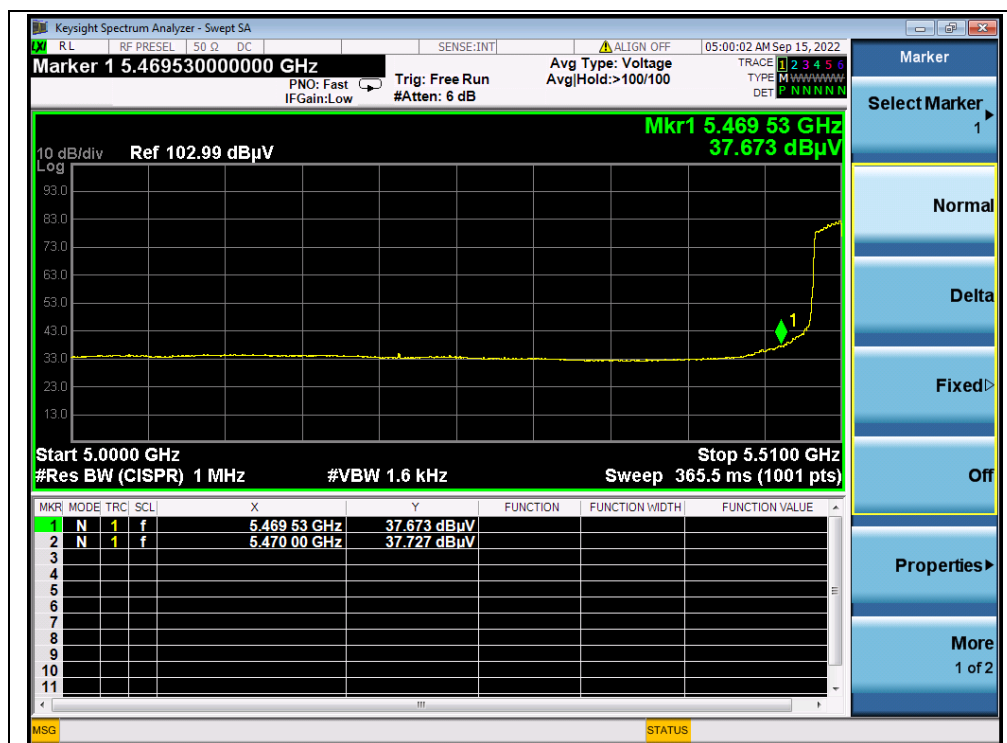
(PEAK, Channel 62, 802.11n (HT40))



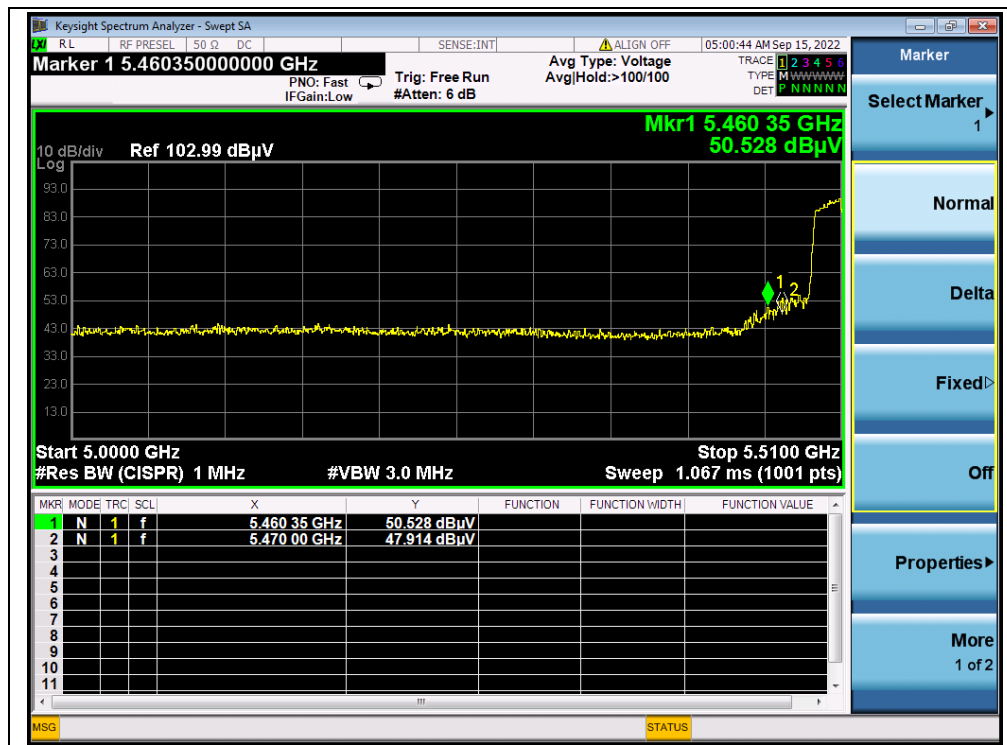
(AVERAGE, Channel 62, 802.11n (HT40))



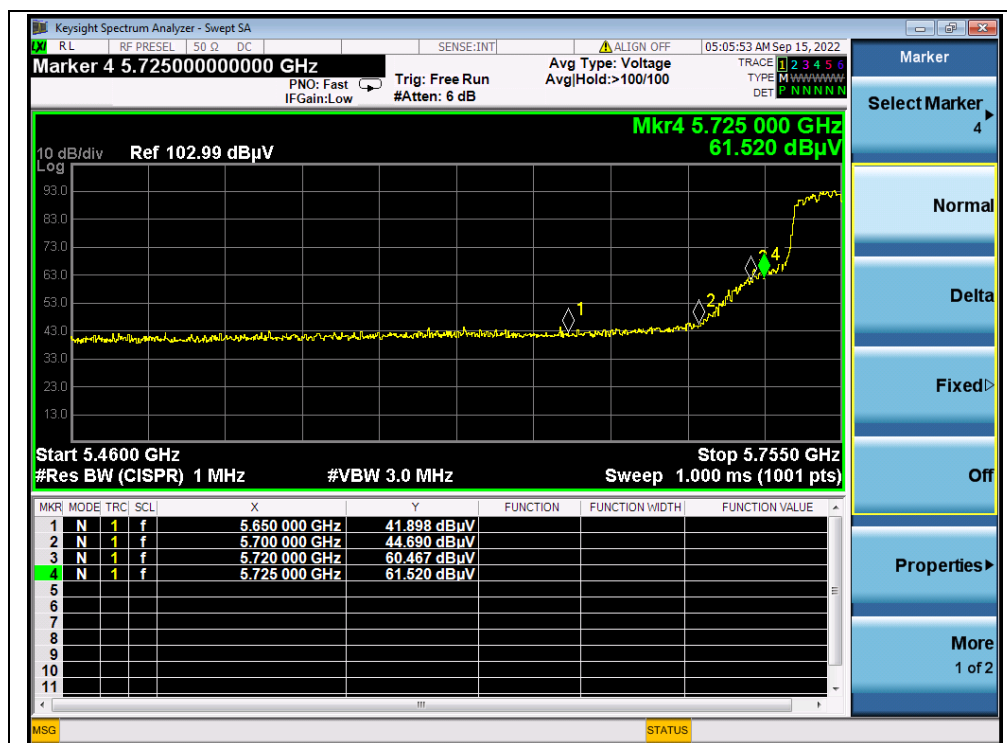
(PEAK, Channel 102, 802.11n (HT40))



(AVERAGE, Channel 102, 802.11n (HT40))



(PEAK, Channel 142, 802.11n (HT40))



(PEAK, Channel 151, 802.11n (HT40))



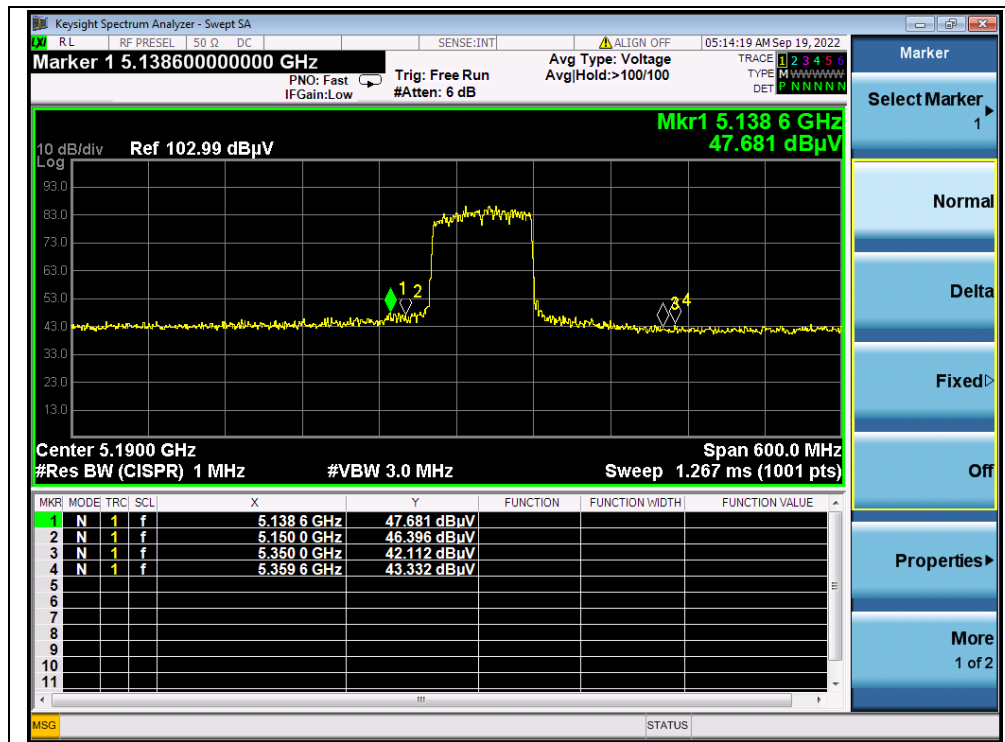
(PEAK, Channel 159, 802.11n (HT40))

**802.11ac (VHT80) Mode****A.Test Verdict:**

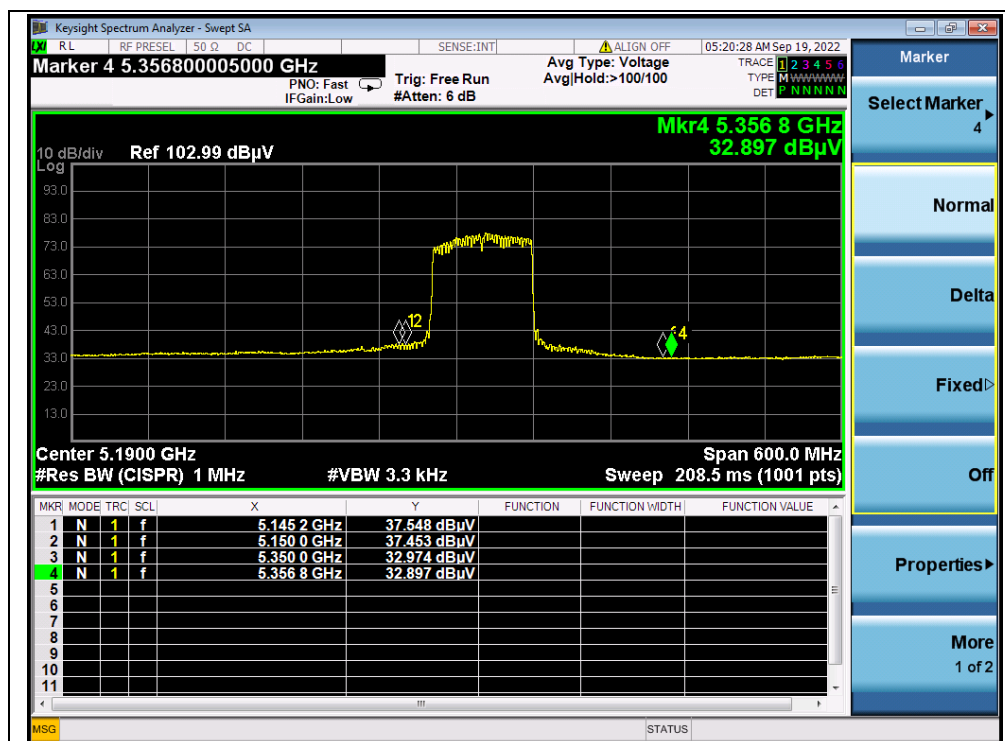
Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dB μ V)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dB μ V/m)	Limit (dB μ V/m)	Verdict
		PK/ AV						
42	5138.60	PK	47.68	-19.54	32.20	47.68	74	PASS
42	5145.20	AV	37.55	-19.54	32.20	37.55	54	PASS
58	5384.40	PK	44.04	-18.80	32.20	44.04	74	PASS
58	5350.00	AV	34.79	-18.80	32.20	34.79	54	PASS
106	5458.52	PK	48.17	-19.20	32.20	48.17	74	PASS
106	5469.12	AV	38.96	-19.20	32.20	38.96	54	PASS
138	5756.25	PK	45.29	-19.20	32.20	45.29	68.23	PASS
155	5720.00	PK	59.17	-19.01	32.20	59.17	110.83	PASS
155	5850.00	PK	55.26	-19.01	32.20	55.26	122.23	PASS



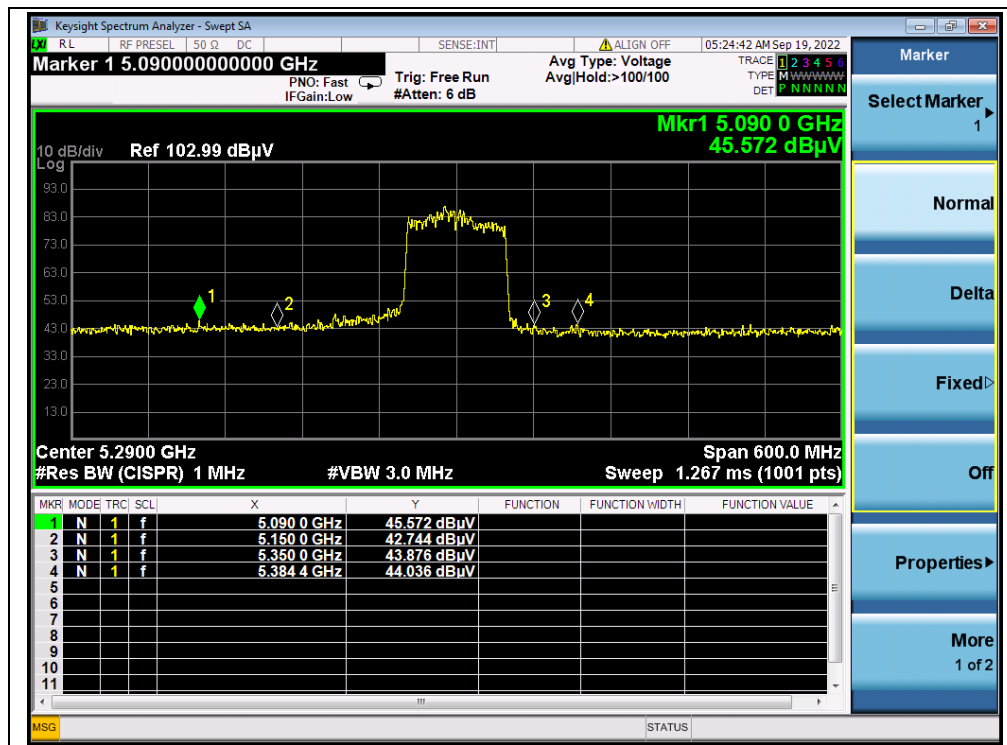
B.Test Plot:



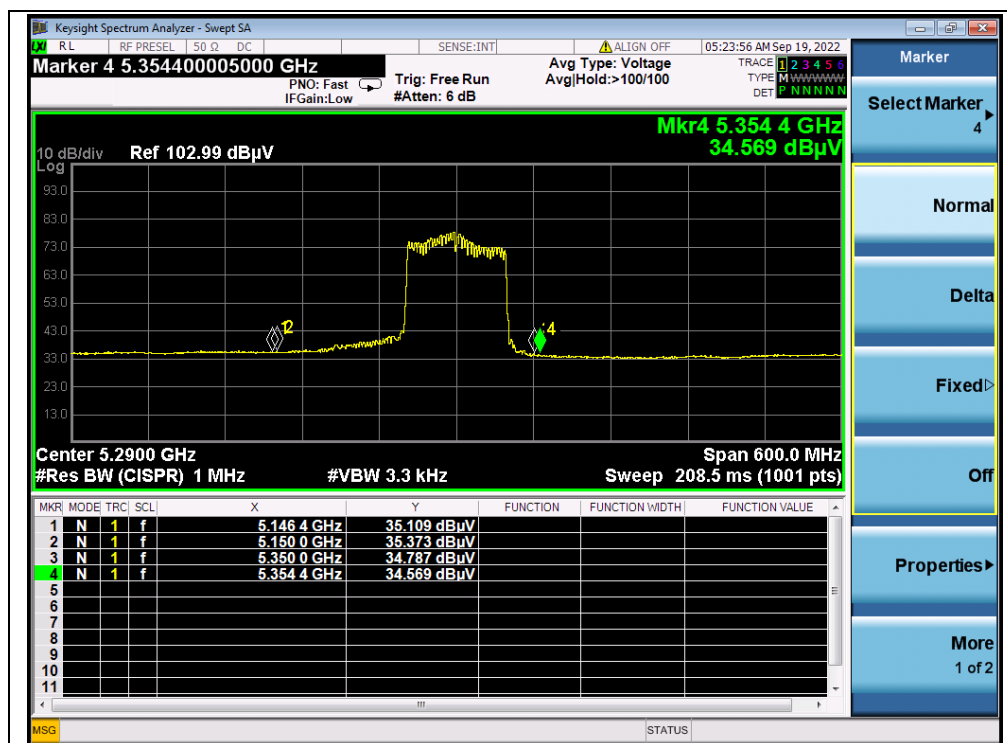
(PEAK, Channel 42, 802.11ac (VHT80))



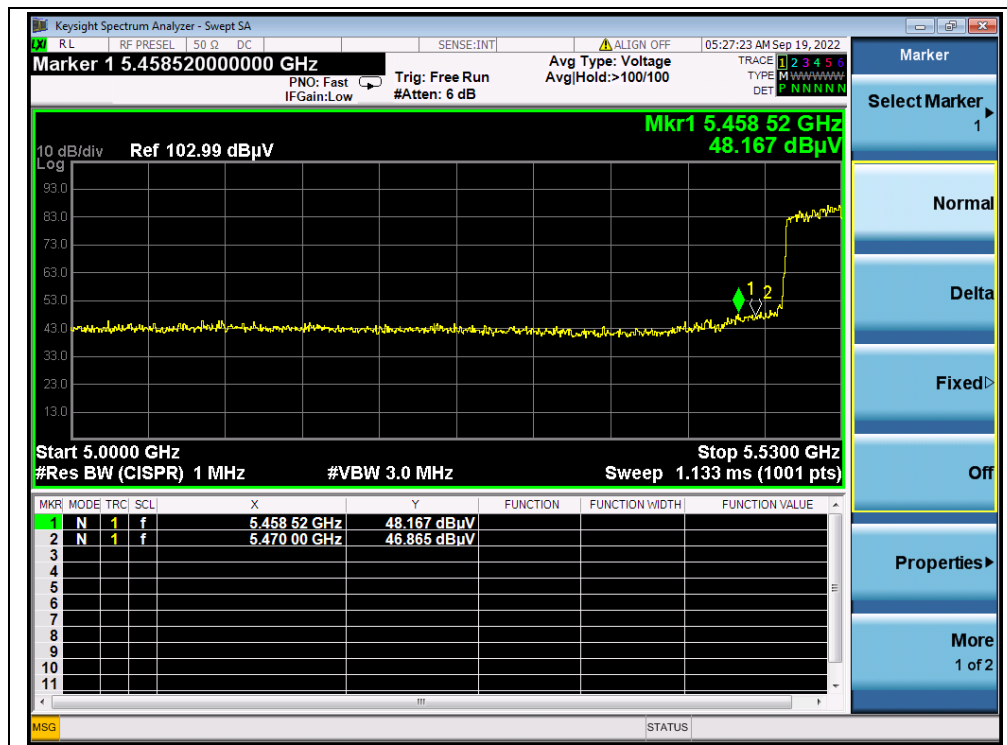
(AVERAGE, Channel 42, 802.11ac (VHT80))



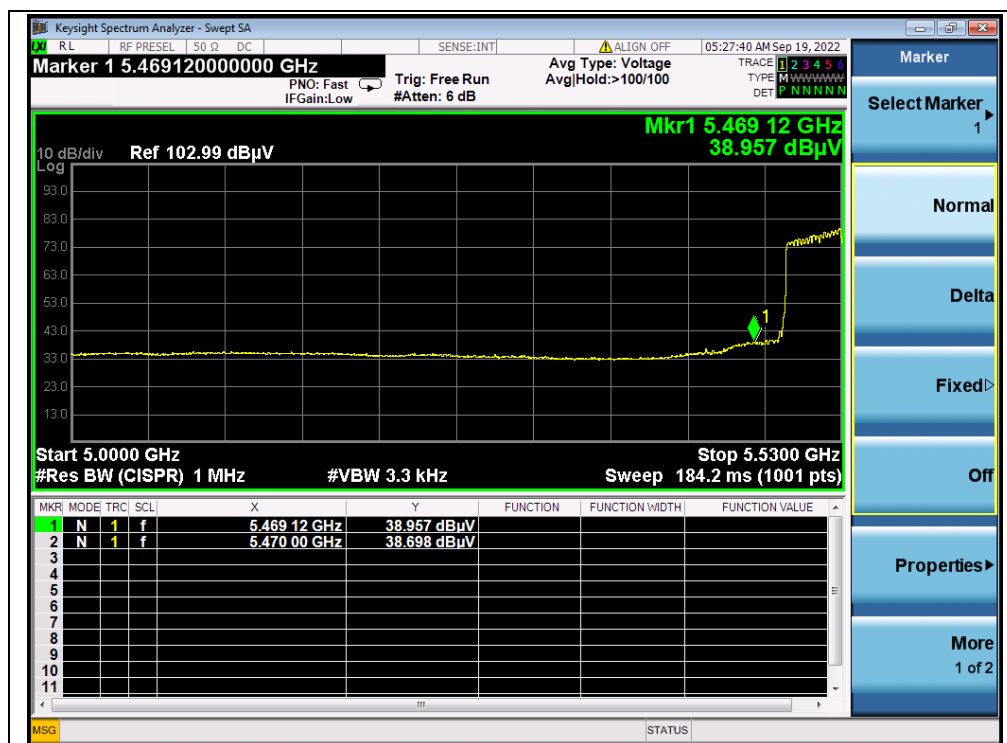
(PEAK, Channel 58, 802.11ac (VHT80))



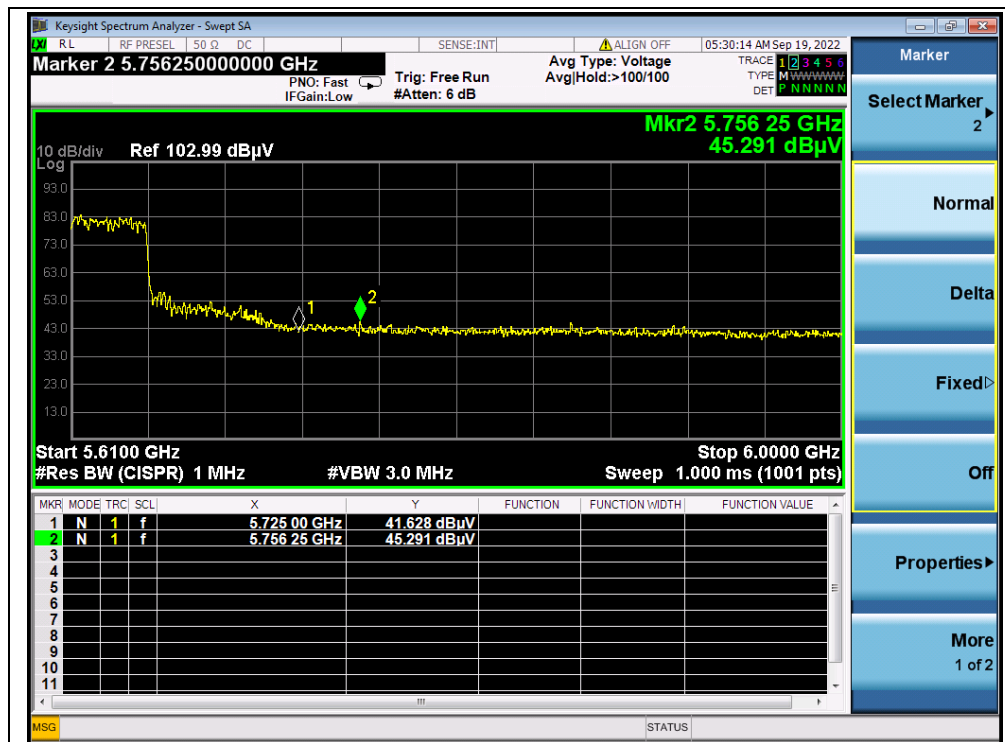
(AVERAGE, Channel 58, 802.11ac (VHT80))



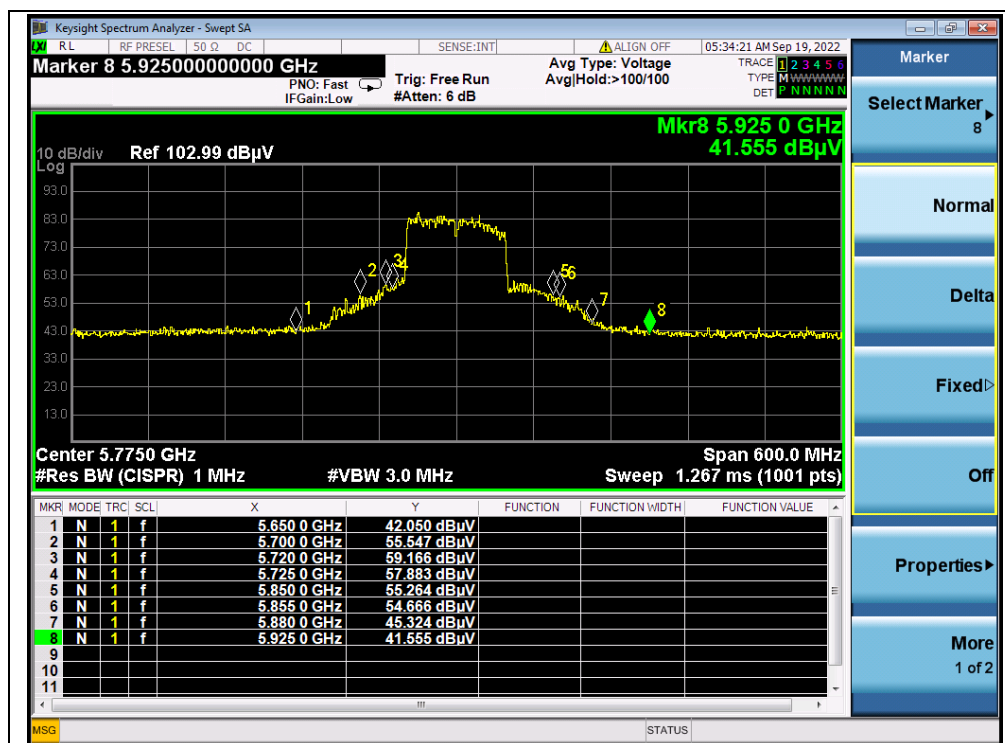
(PEAK, Channel 106, 802.11ac (VHT80))



(AVERAGE, Channel 106, 802.11ac (VHT80))



(PEAK, Channel 138, 802.11ac (VHT80))



(PEAK, Channel 155, 802.11ac (VHT80))

2.9. Radiated Emission

2.9.1. Requirement

The peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

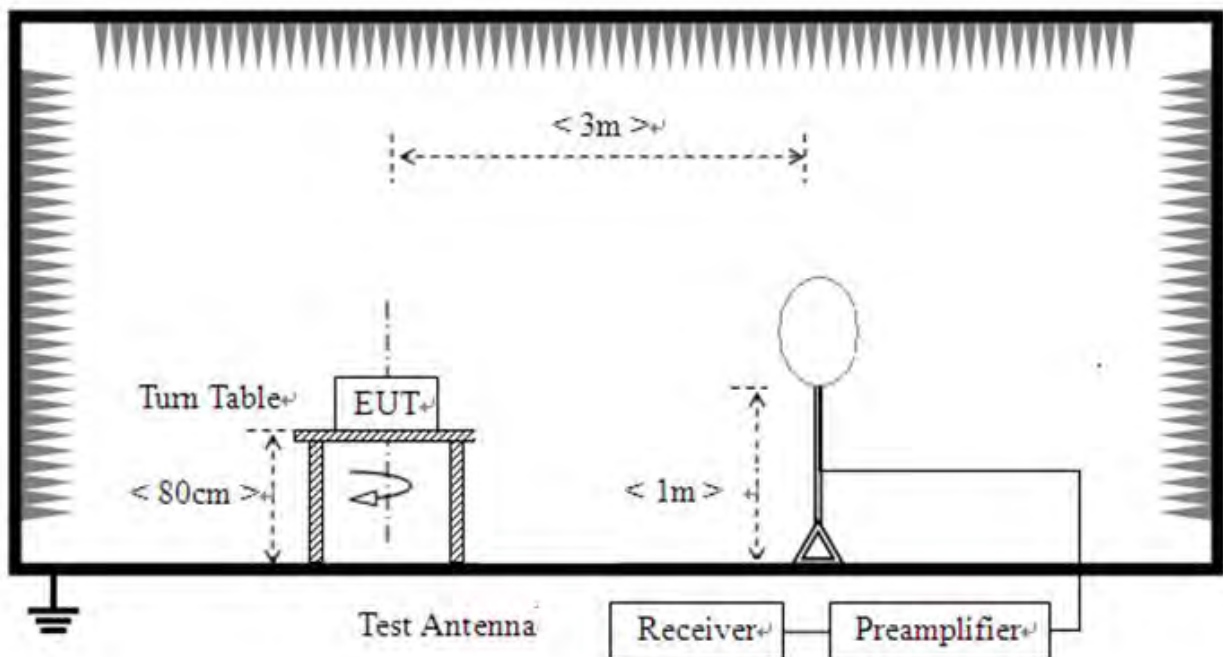
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

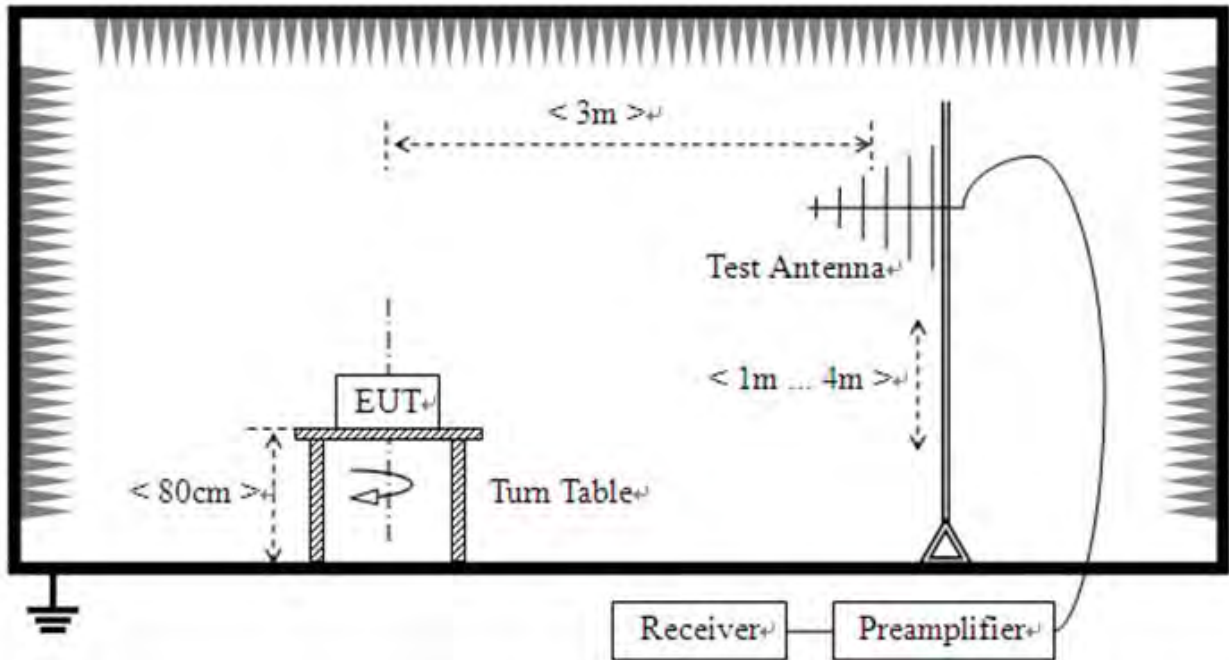
2.9.2. Test Description

Test Setup:

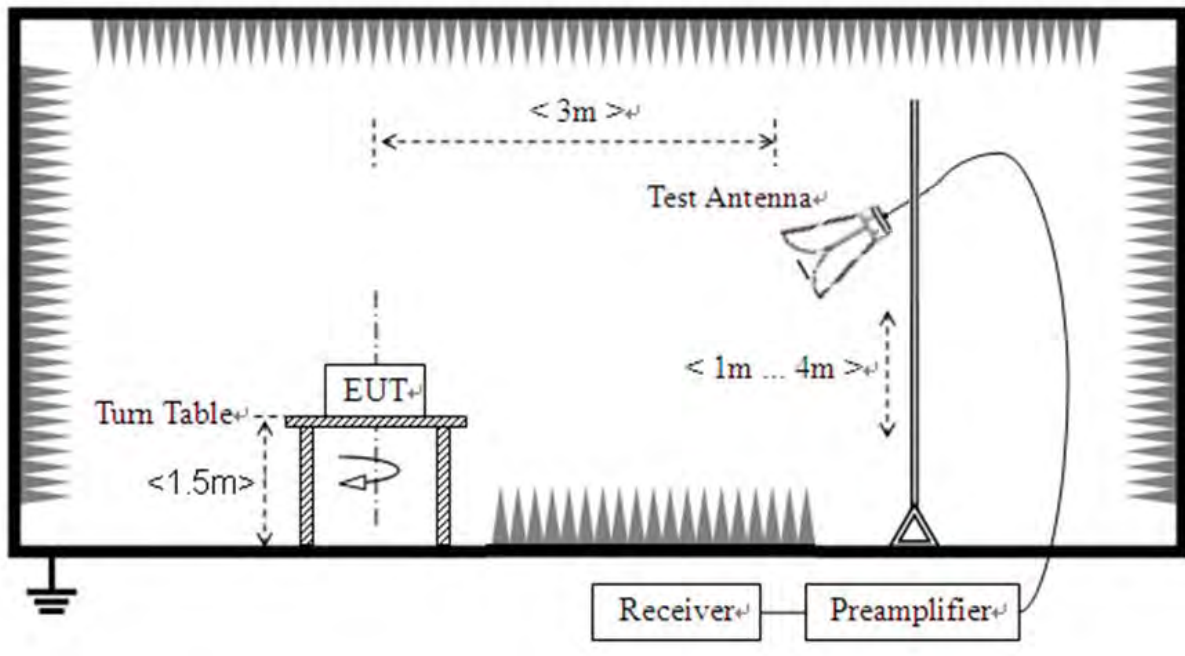
- 1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to 1GHz



3) For radiated emissions above 1GHz





The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.





2.9.3. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V/m}] = U_R + A_T + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note 1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

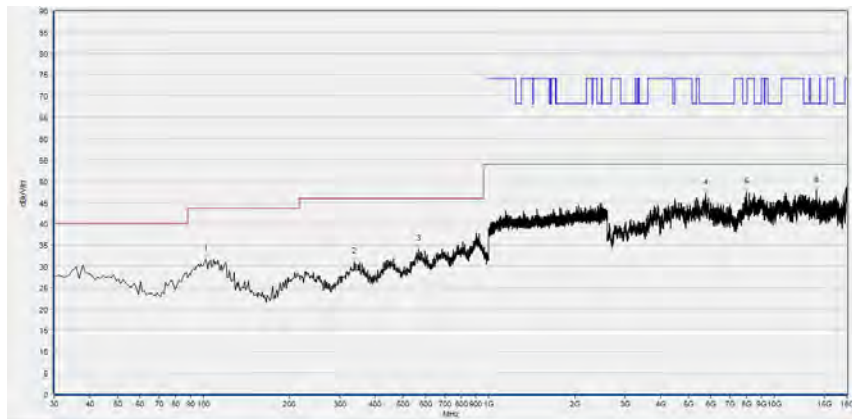
Note 2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 3: For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

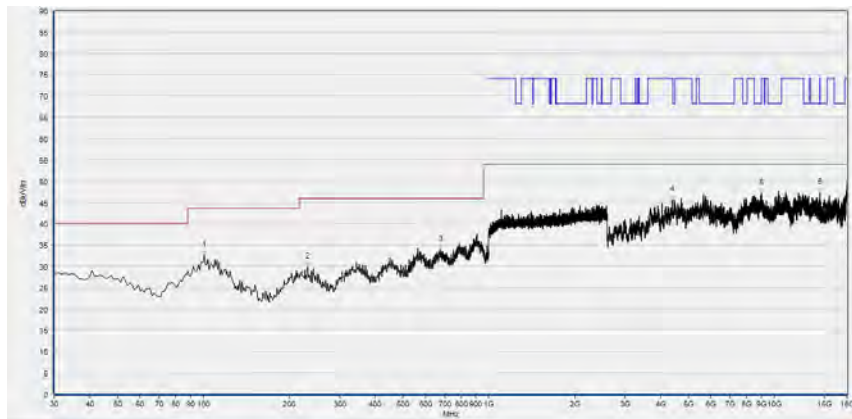
**802.11a Mode**

Plot for Channel 36



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
101.852	31.64	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
336.827	30.93	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
565.976	34.11	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5751.470	47.07	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
7978.756	47.35	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
14019.844	47.69	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

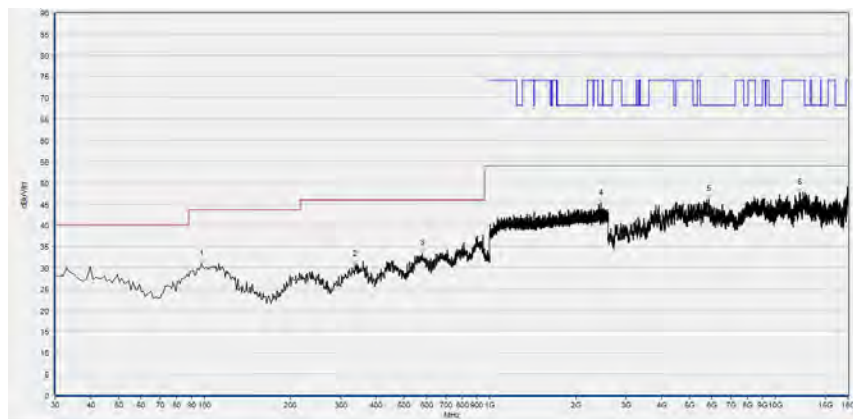
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	32.55	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
231.962	29.75	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
676.667	33.84	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4392.919	45.51	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8992.278	47.05	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
14429.566	47.20	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

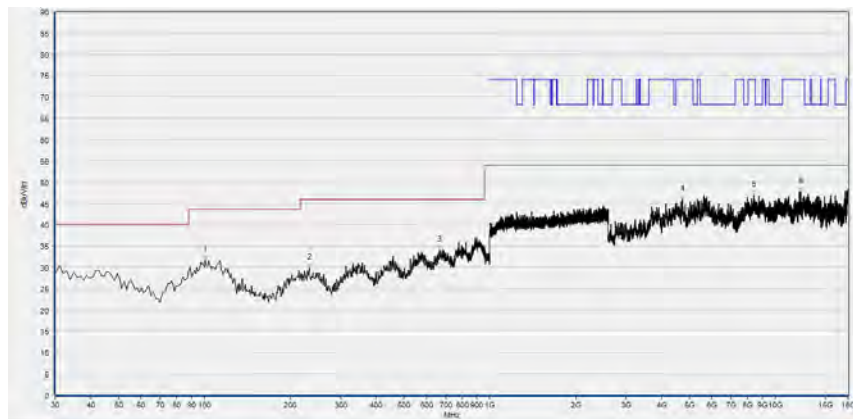
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 44



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
97.968	30.89	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
336.827	30.60	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
580.541	33.40	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2452.751	45.06	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5859.292	46.06	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12189.958	47.56	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

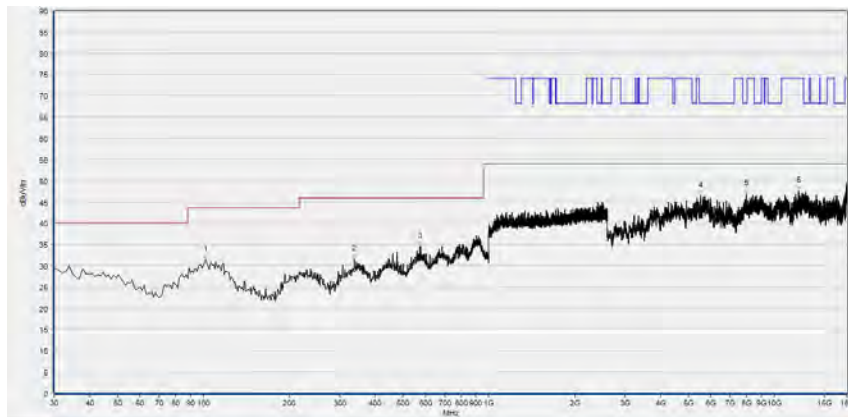
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	31.61	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
232.933	29.87	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
666.957	33.94	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4728.706	45.85	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8419.284	46.94	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12288.538	47.81	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

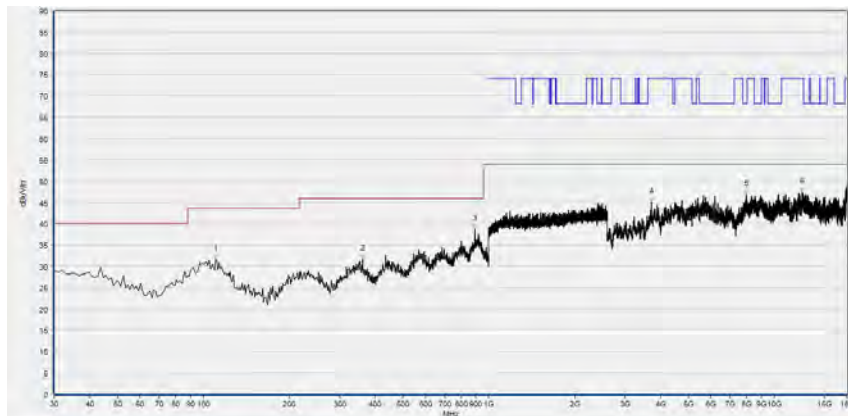
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 48



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
101.852	31.28	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
337.798	31.45	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
573.744	34.51	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5508.102	46.43	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
7981.836	46.96	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12174.555	47.58	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

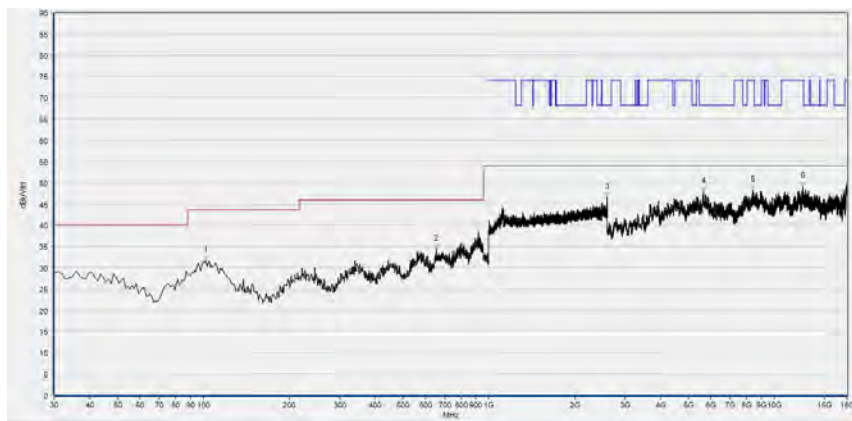
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
110.591	31.62	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
361.101	31.69	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
895.135	38.71	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
3705.941	45.15	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
7978.756	46.94	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12519.584	47.41	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

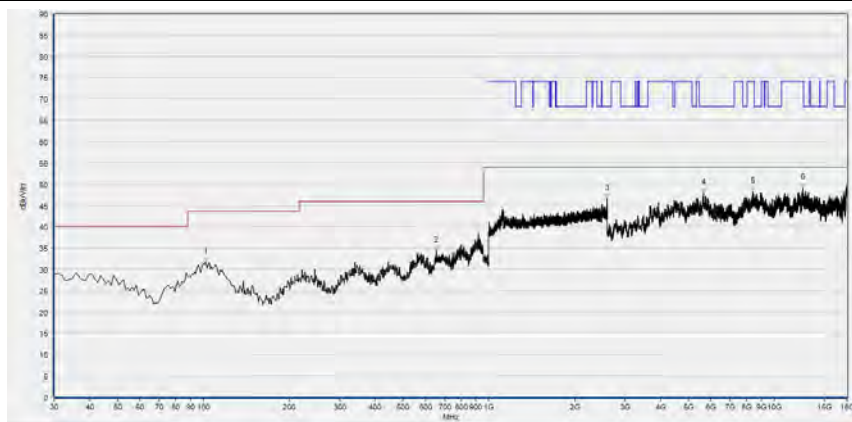
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 52



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.823	31.30	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
240.701	29.95	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
674.725	34.10	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1108.303	46.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5668.294	47.83	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12676.695	48.46	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

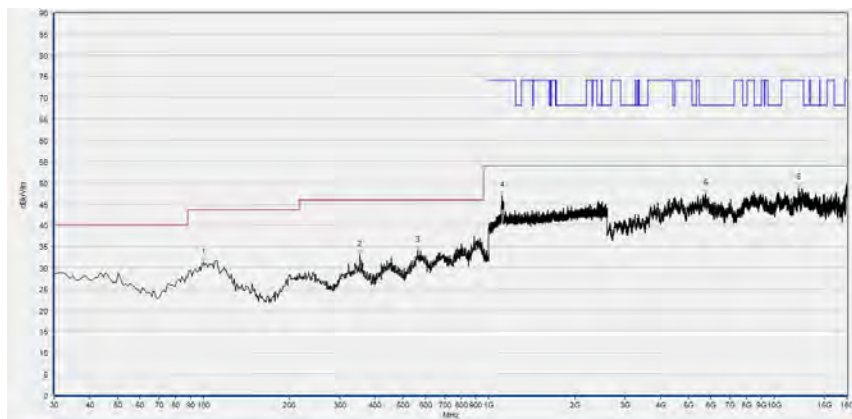
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
101.852	31.69	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
656.276	34.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2597.866	46.62	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5646.729	48.00	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8431.606	48.35	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12556.551	49.11	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

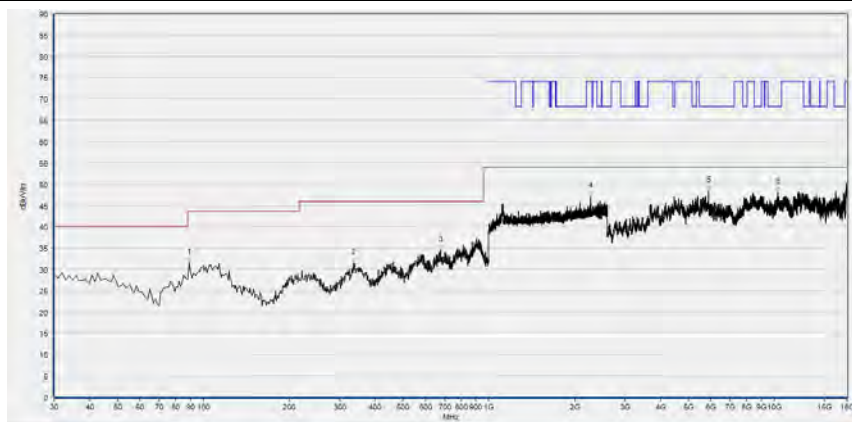
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 60



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
99.910	31.10	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
353.333	32.96	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
564.034	34.03	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1111.504	46.91	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5742.228	47.43	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12149.910	48.79	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

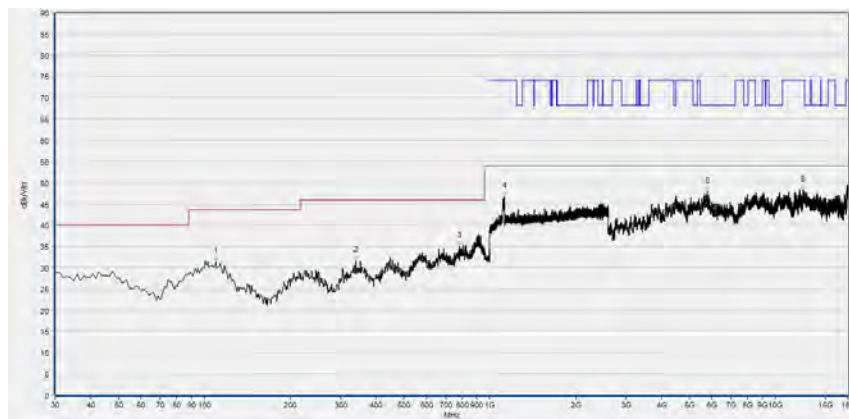
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
89.229	31.47	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
334.885	31.52	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
677.638	34.51	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2274.558	47.12	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5871.614	48.44	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10313.863	48.18	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

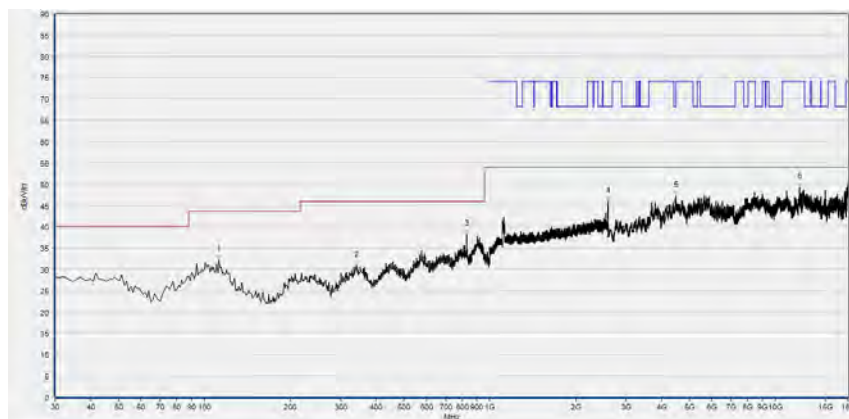
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 64



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	31.26	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
338.769	31.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
781.532	35.03	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1124.308	46.68	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5776.115	47.97	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12498.020	48.26	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

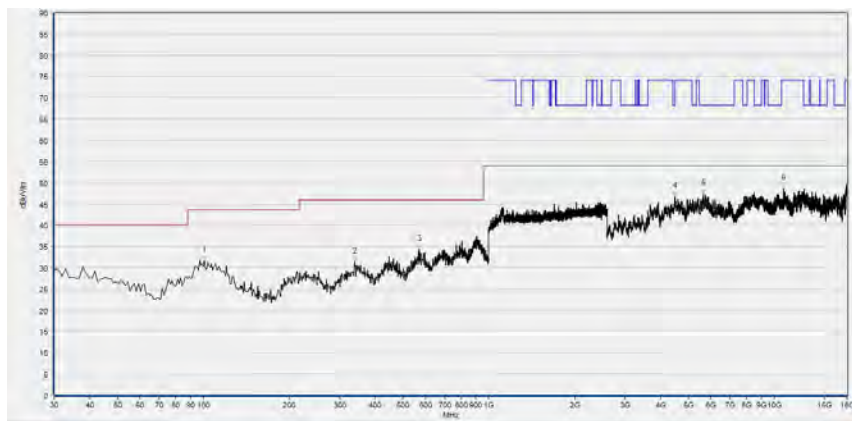
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
112.533	32.17	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
341.682	30.88	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
830.080	38.28	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2597.866	45.91	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4485.337	47.23	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12162.232	49.33	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

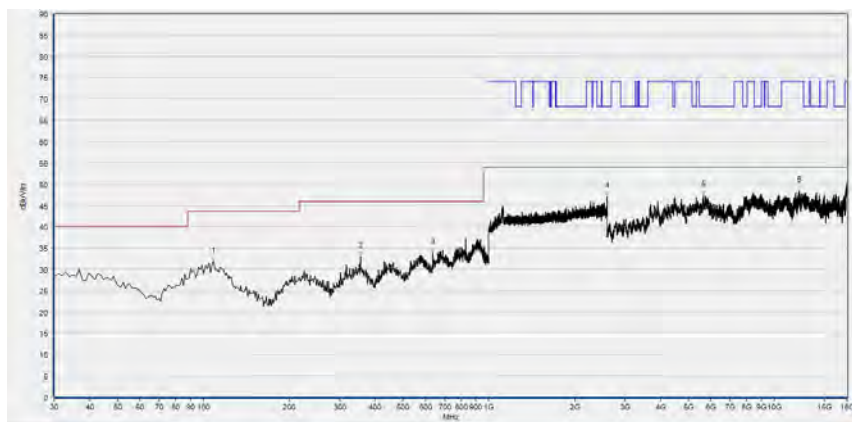
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 100



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	31.65	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
338.769	31.34	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
570.831	34.31	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4491.498	46.75	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5646.729	47.35	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10788.278	48.62	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

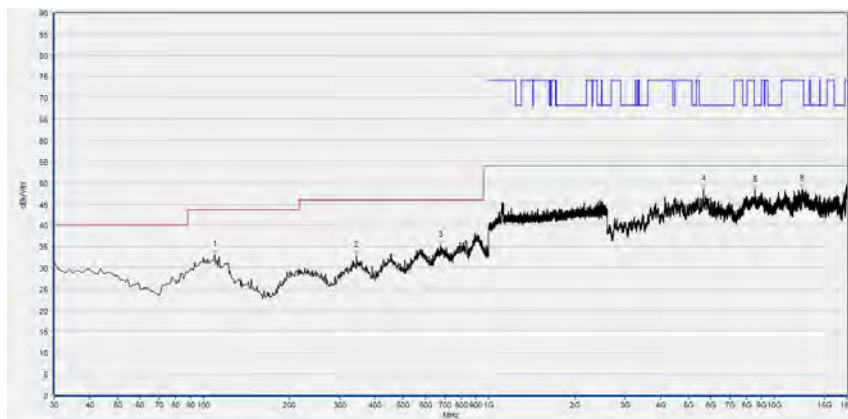
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
108.649	31.81	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
355.275	33.05	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
635.886	33.83	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2600.000	47.08	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5643.649	47.43	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12211.522	48.45	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

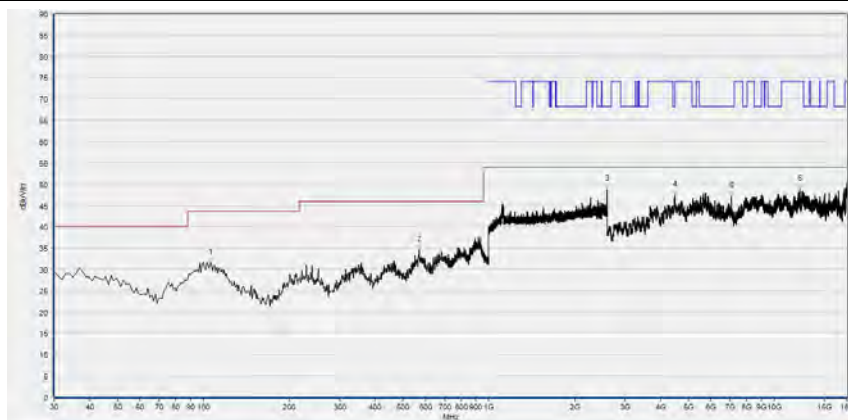
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 120



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	32.98	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
343.624	32.90	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
679.580	35.12	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5652.891	48.48	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8551.750	48.27	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12513.423	48.37	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

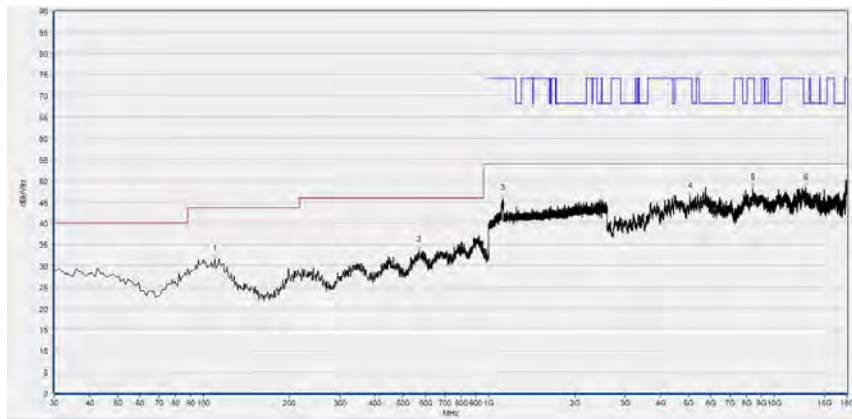
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
105.736	31.59	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
569.860	34.47	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2600.000	48.74	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
4482.256	47.42	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7079.216	47.12	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12300.860	48.84	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

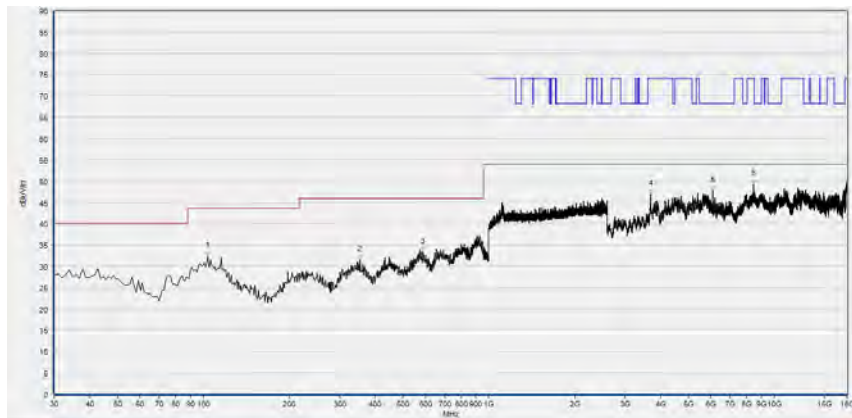
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 144



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	31.50	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
568.889	33.59	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1116.305	45.80	N/A	N/A	74.00	N/A	74.00	Horizontal	PASS
5079.896	46.21	N/A	N/A	74.00	N/A	74.00	Horizontal	PASS
8428.526	48.27	N/A	N/A	74.00	N/A	74.00	Horizontal	PASS
12873.855	48.24	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

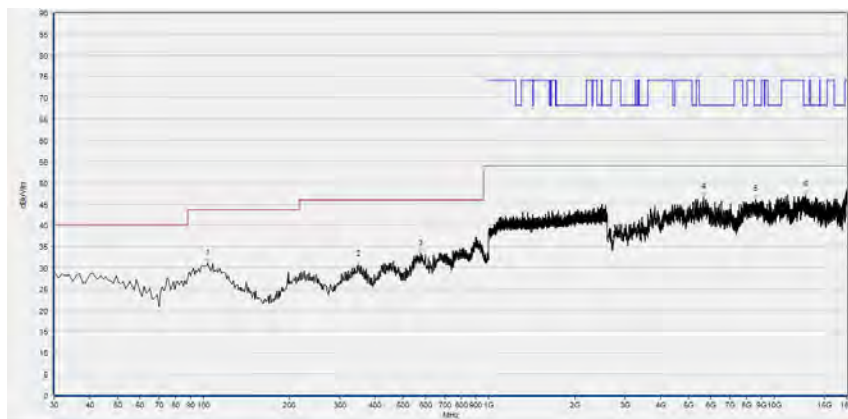
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.794	32.30	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
354.304	31.44	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
586.366	33.42	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
3693.619	47.00	N/A	N/A	74.00	N/A	74.00	Vertical	PASS
6090.338	47.76	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8468.574	49.21	N/A	N/A	74.00	N/A	74.00	Vertical	PASS

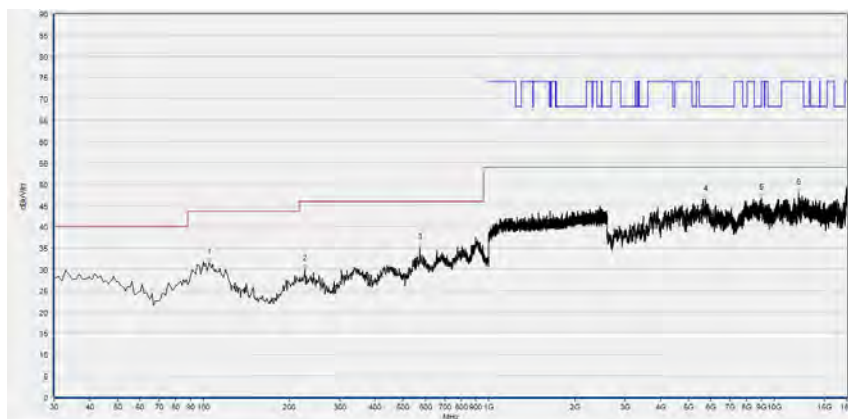
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 149



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.794	31.04	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
349.449	30.64	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
576.657	33.40	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5659.052	46.58	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8631.846	46.08	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12907.742	47.05	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

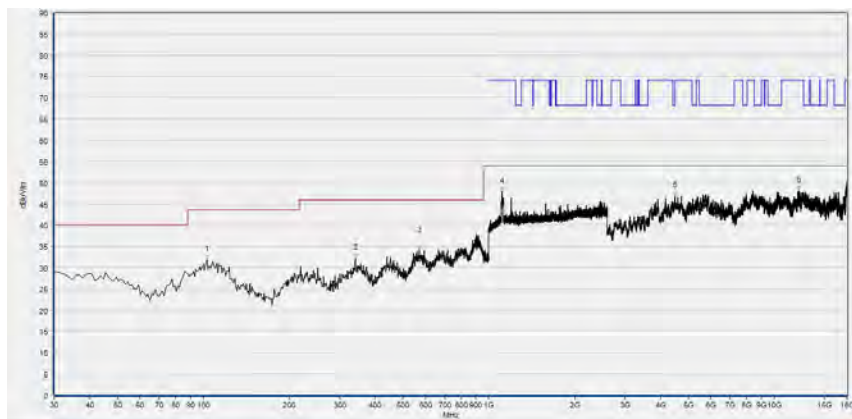
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
104.765	31.43	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
227.107	29.99	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
572.773	34.99	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5760.712	46.42	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
9016.923	46.69	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12159.152	47.97	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

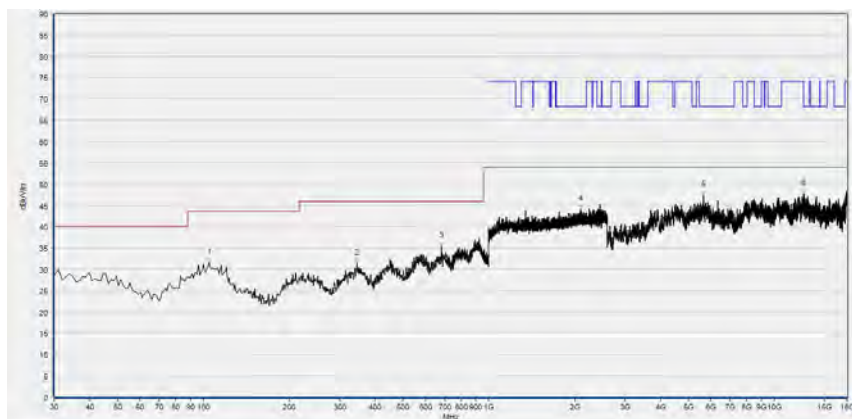
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 157



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.823	31.83	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
340.711	32.13	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
570.831	34.13	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1112.571	48.01	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
4488.418	46.98	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12140.668	48.12	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

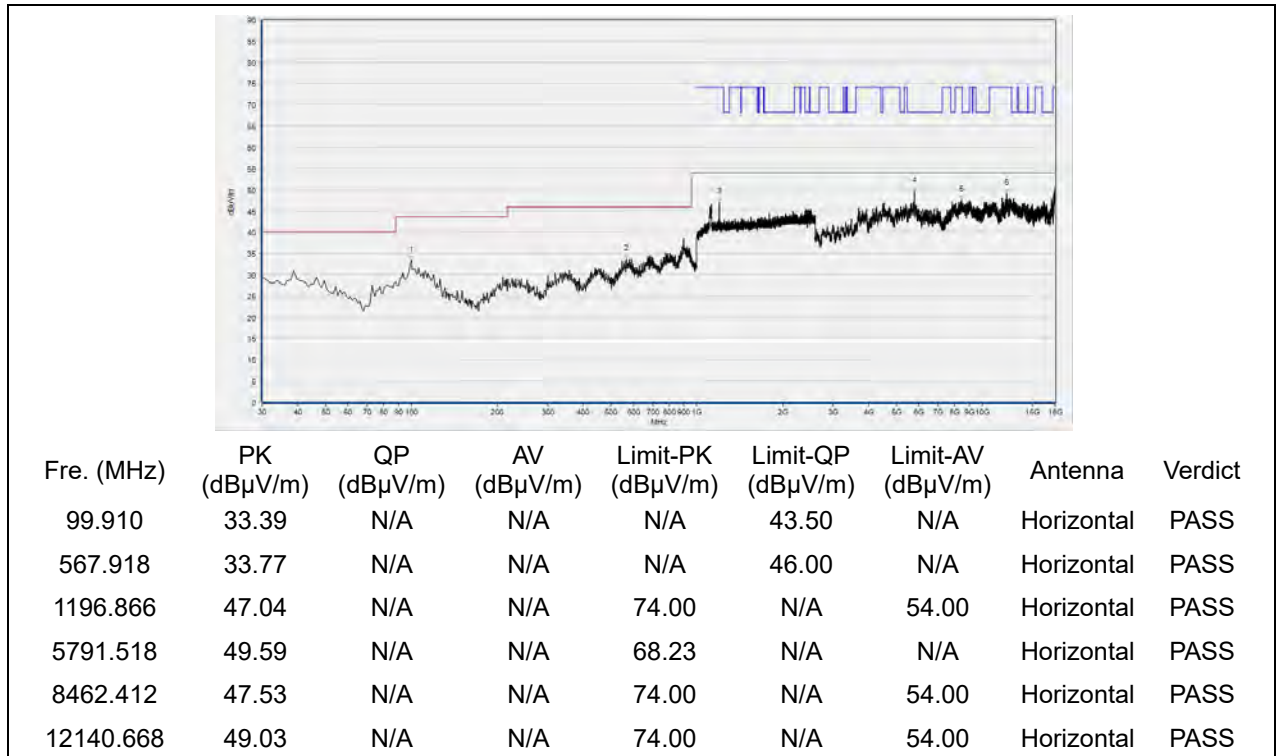
(Antenna Horizontal, 30MHz to 18GHz)



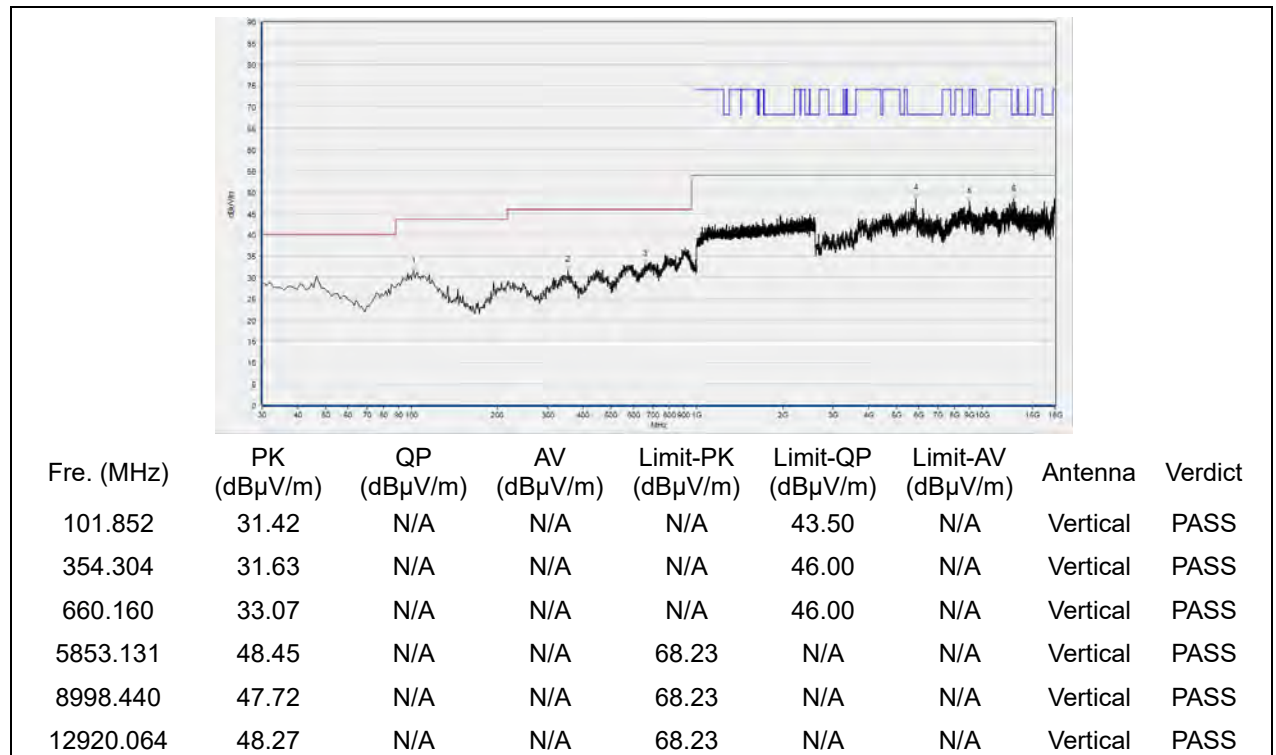
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
104.765	31.49	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
344.595	31.31	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
683.463	35.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2098.499	44.11	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5652.891	47.44	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12685.937	47.83	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 165



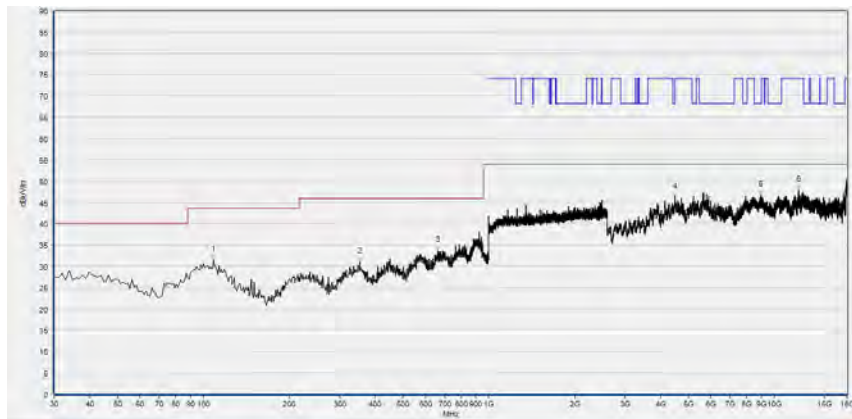
(Antenna Horizontal, 30MHz to 18GHz)



(Antenna Vertical, 30MHz to 18GHz)

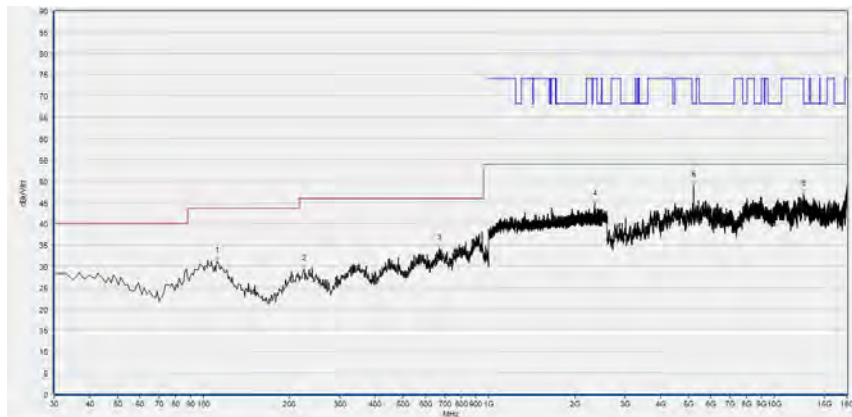
**802.11n (HT40) mode**

Plot for Channel 38



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
108.649	31.46	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
353.333	30.96	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
662.102	33.62	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
4482.256	46.20	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8986.117	46.68	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12196.119	47.95	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

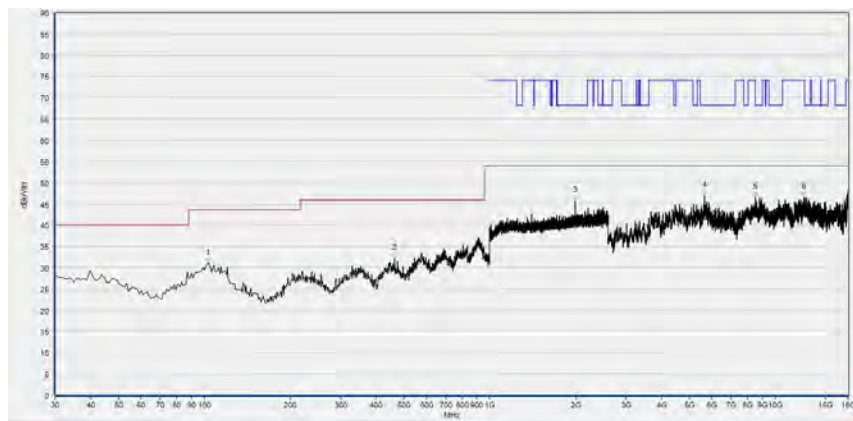
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
111.562	31.14	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
225.165	29.33	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
669.870	34.20	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2347.116	44.64	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5218.524	48.86	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
12667.453	46.95	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

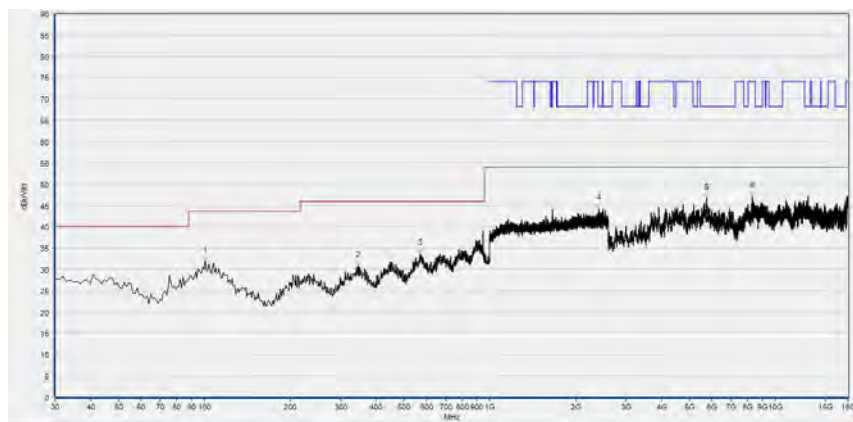
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 46



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
102.823	31.03	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
464.024	32.14	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1996.599	45.79	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5640.568	46.98	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8490.138	46.63	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12562.713	46.51	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

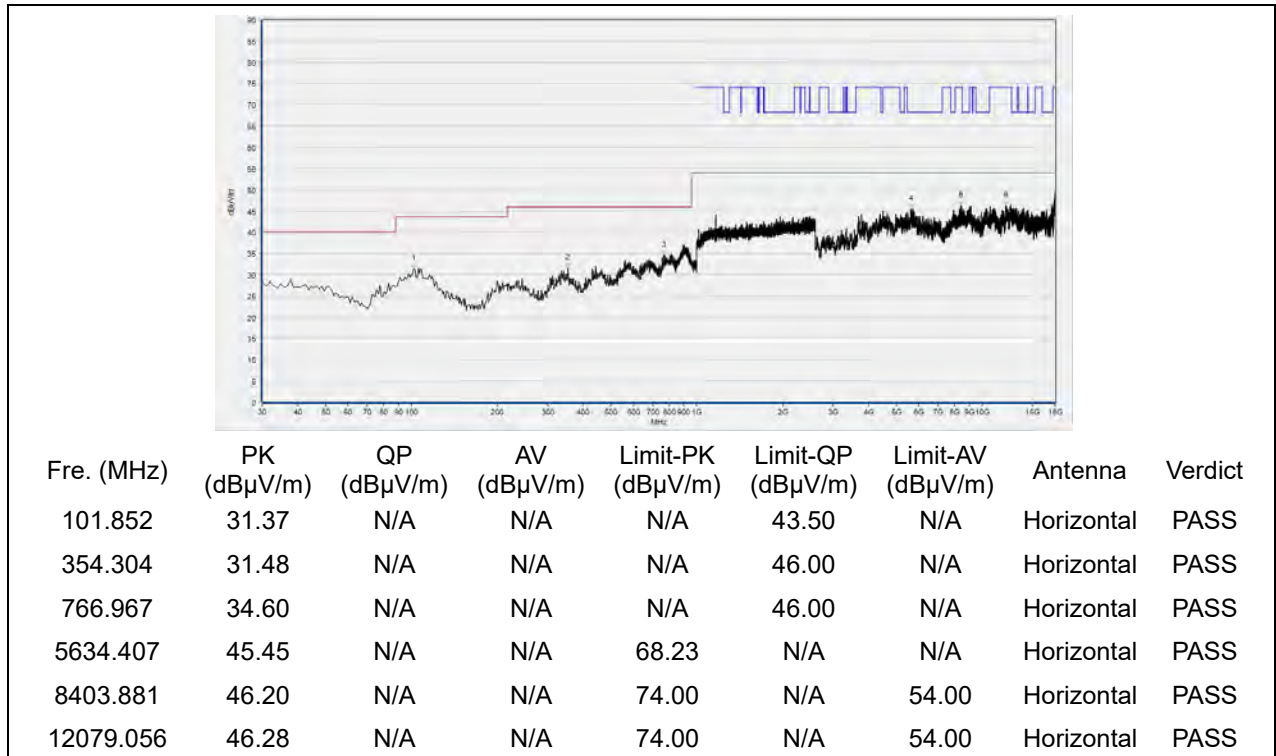
(Antenna Horizontal, 30MHz to 18GHz)



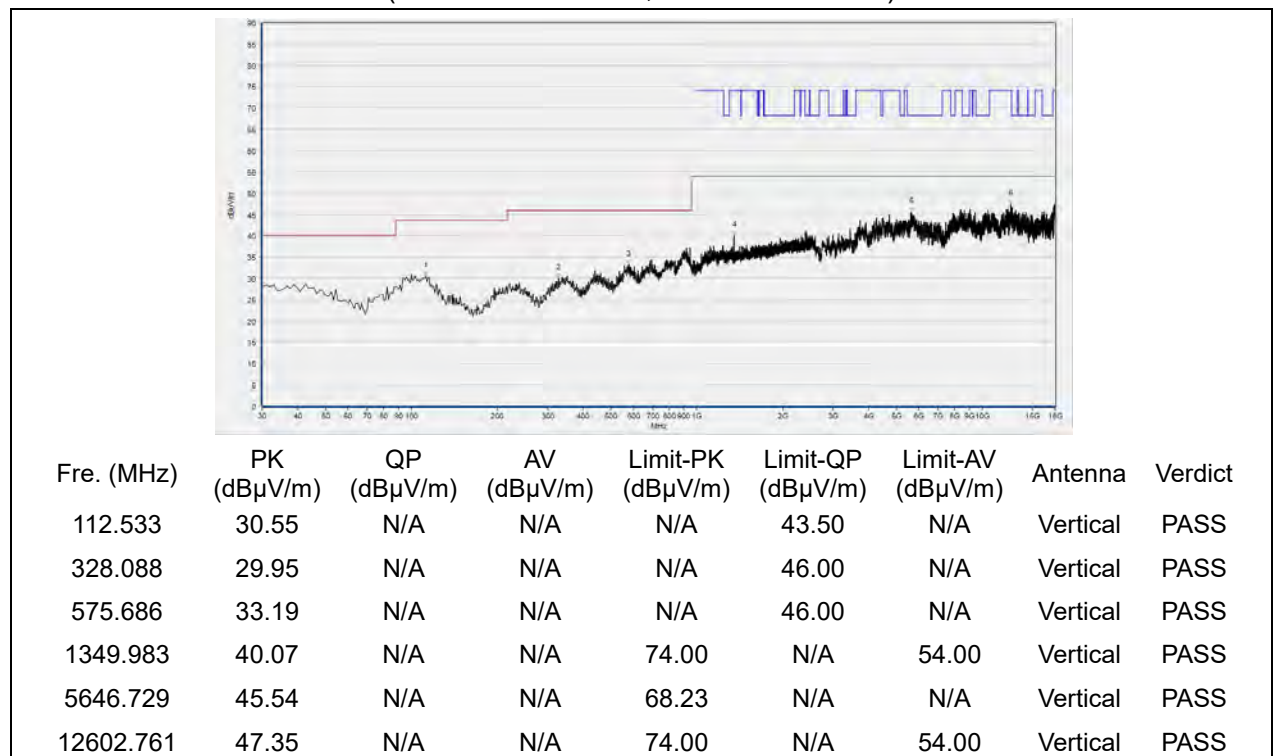
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	32.03	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
345.566	30.90	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
569.860	33.69	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2413.271	44.26	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5742.228	46.77	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8305.301	47.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 54

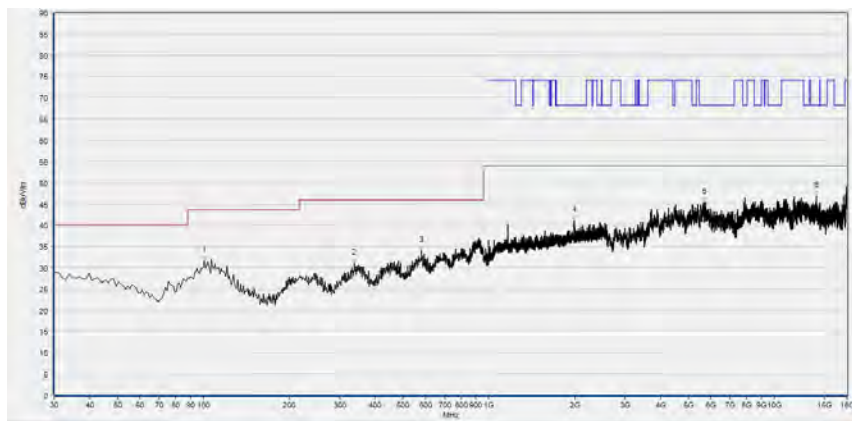


(Antenna Horizontal, 30MHz to 18GHz)



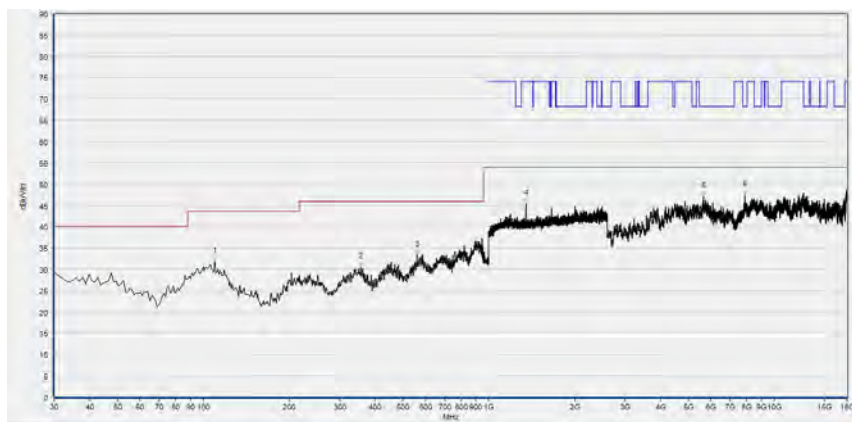
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 62



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	31.71	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
337.798	30.98	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
581.512	33.95	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1991.797	41.09	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5671.374	45.46	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
14056.811	46.86	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

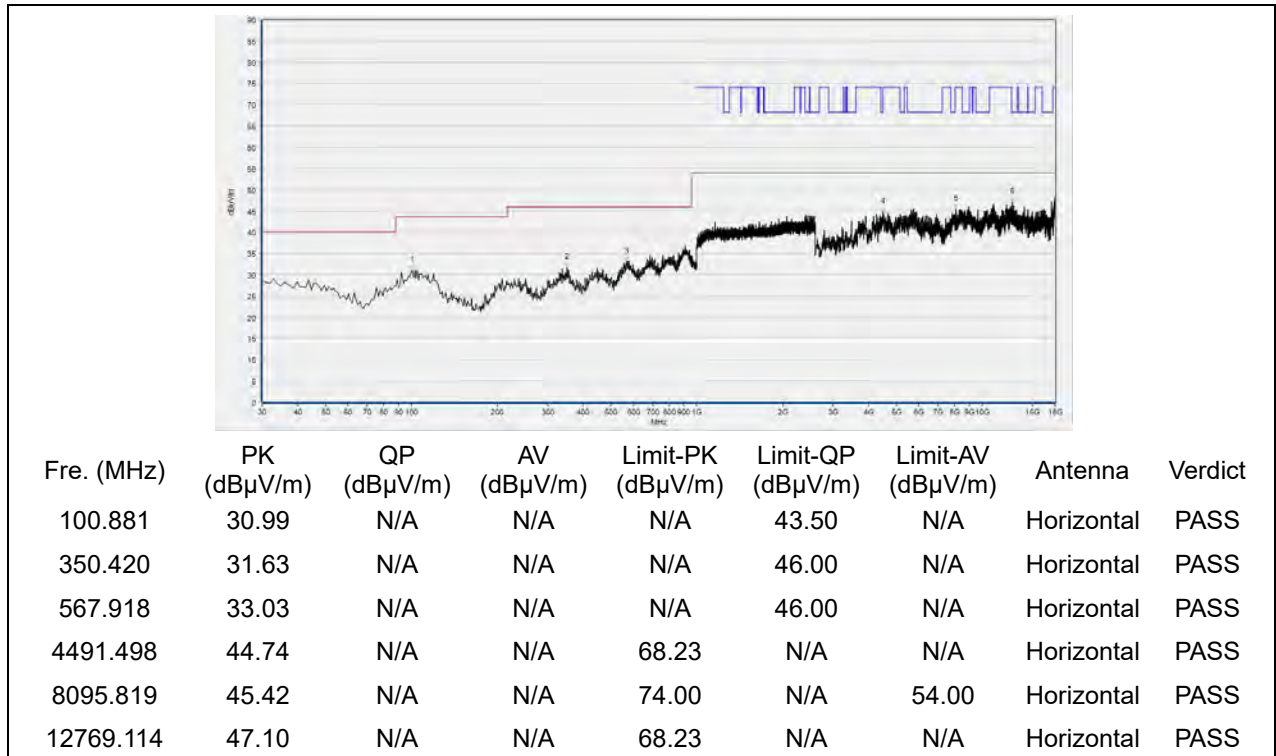
(Antenna Horizontal, 30MHz to 18GHz)



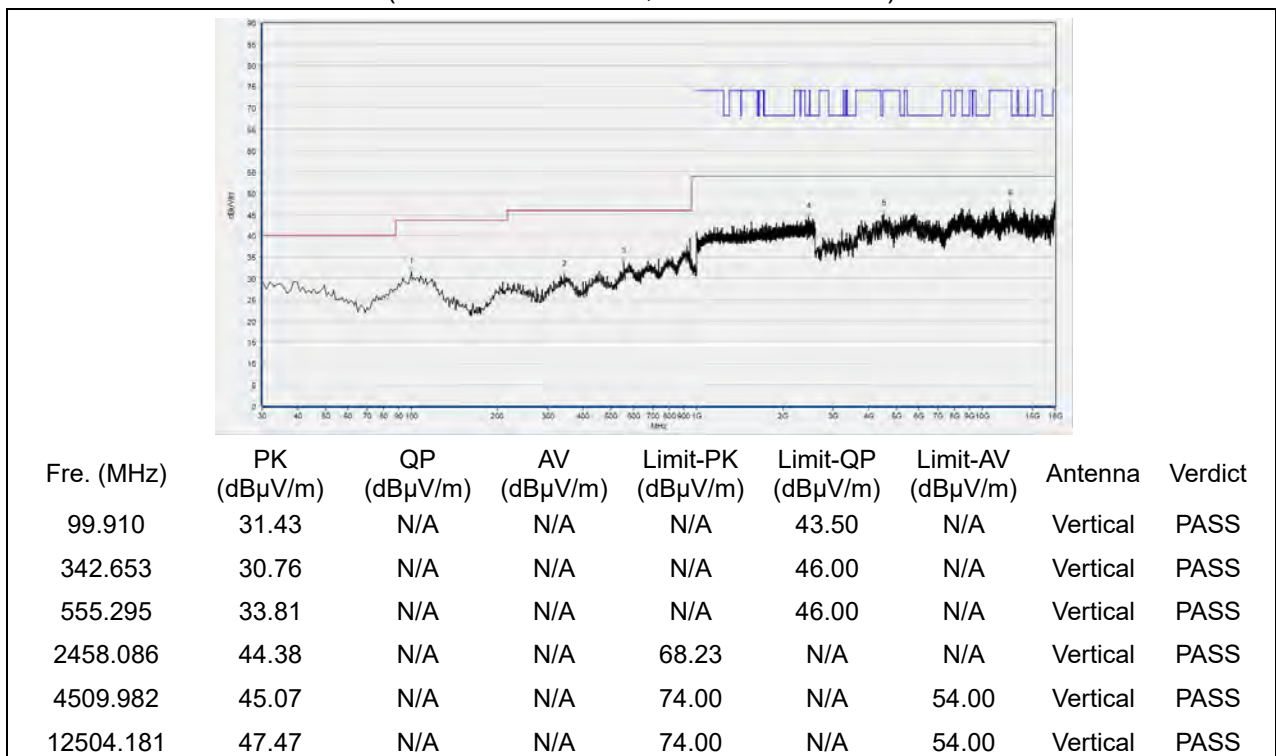
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	31.89	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
356.246	30.58	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
561.121	33.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
1349.983	45.38	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5637.487	47.17	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
7910.982	47.35	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 102

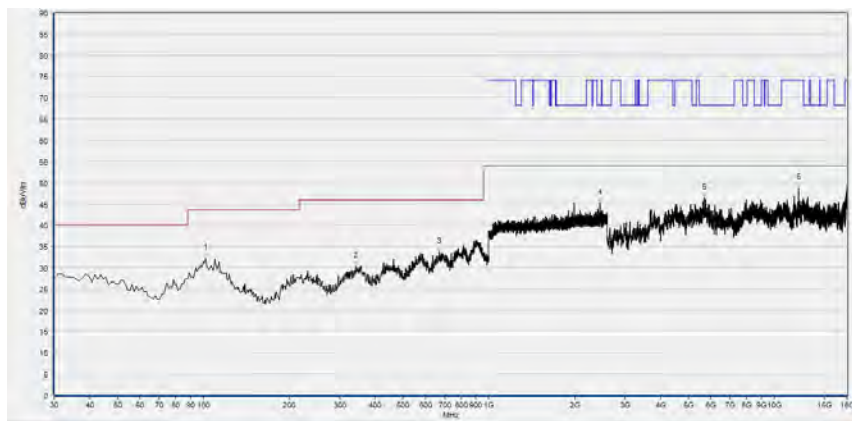


(Antenna Horizontal, 30MHz to 18GHz)



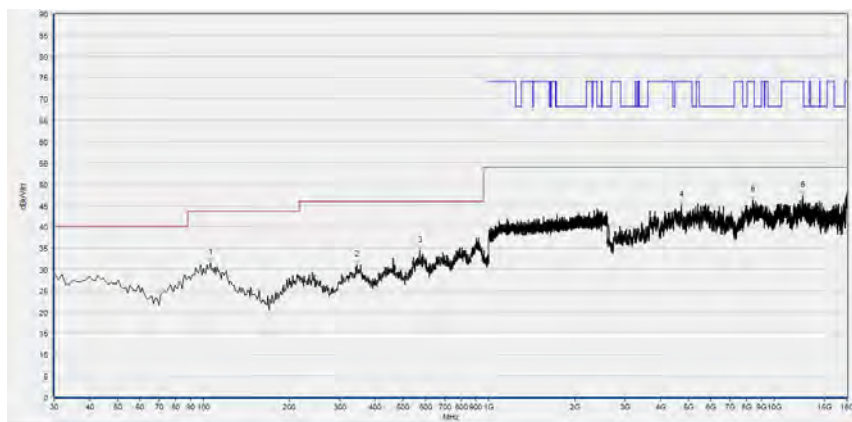
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 126



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
101.852	32.11	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
341.682	30.37	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
671.812	33.75	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2446.882	45.18	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
5699.100	46.35	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12159.152	48.84	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

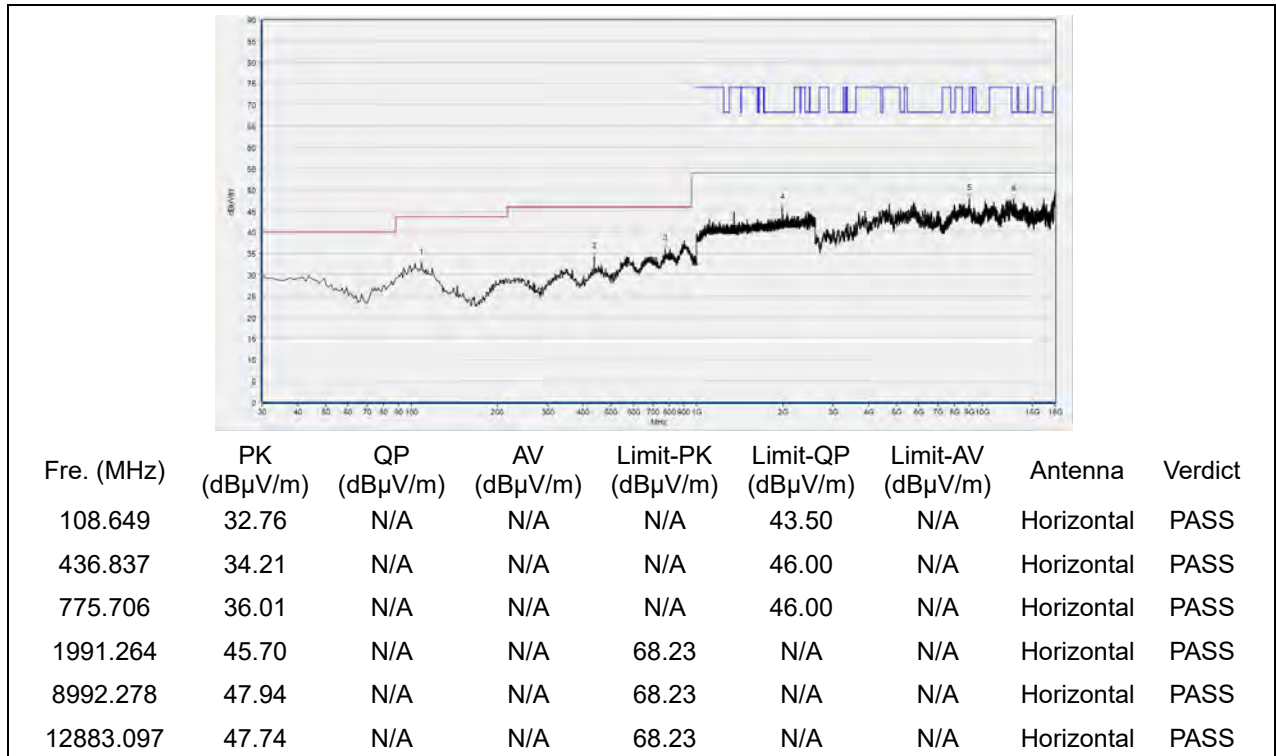
(Antenna Horizontal, 30MHz to 18GHz)



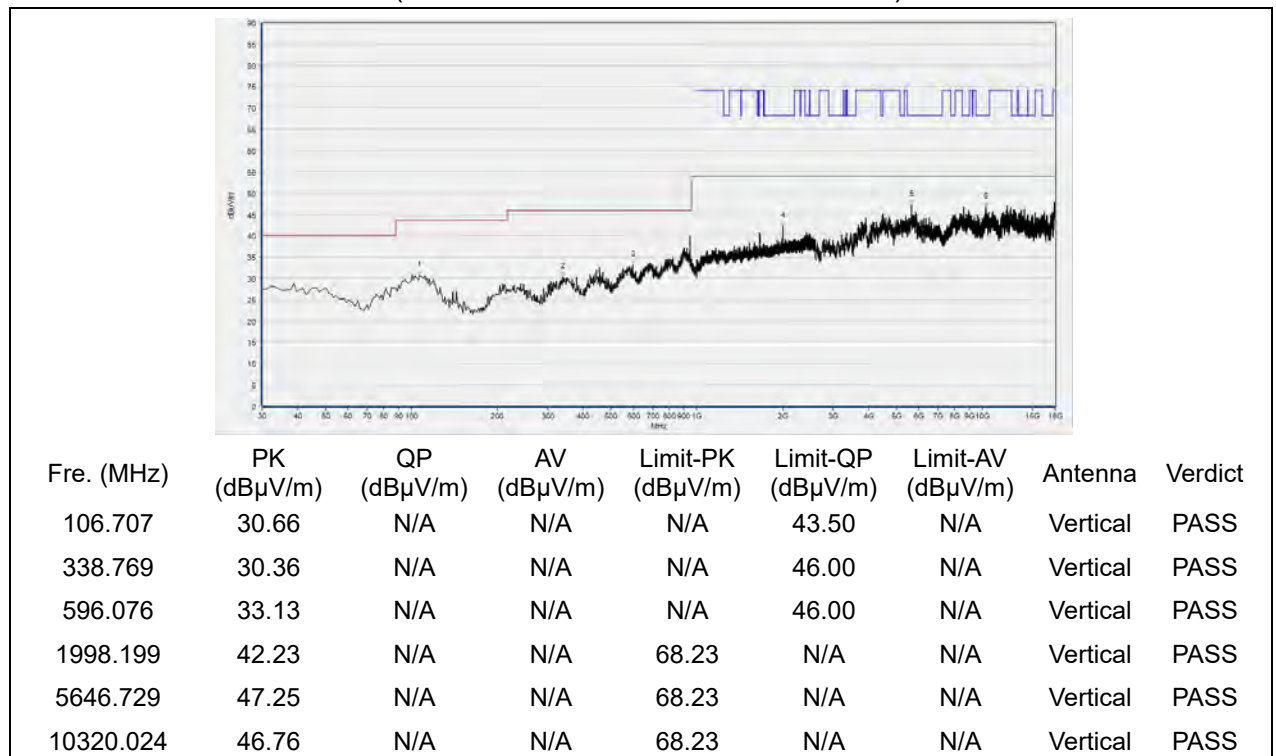
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
105.736	31.56	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
344.595	31.05	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
572.773	34.37	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4728.706	45.02	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8431.606	46.32	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12612.002	47.30	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 142

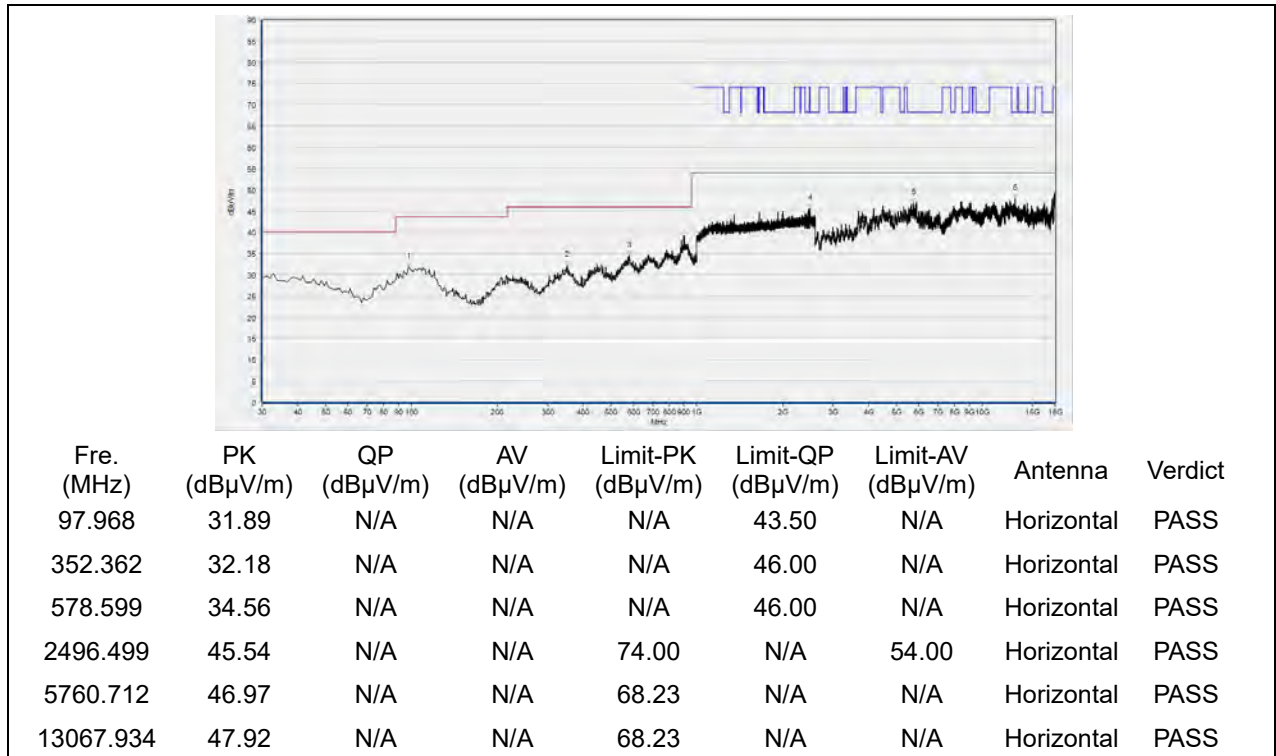


(Antenna Horizontal, 30MHz to 18GHz)

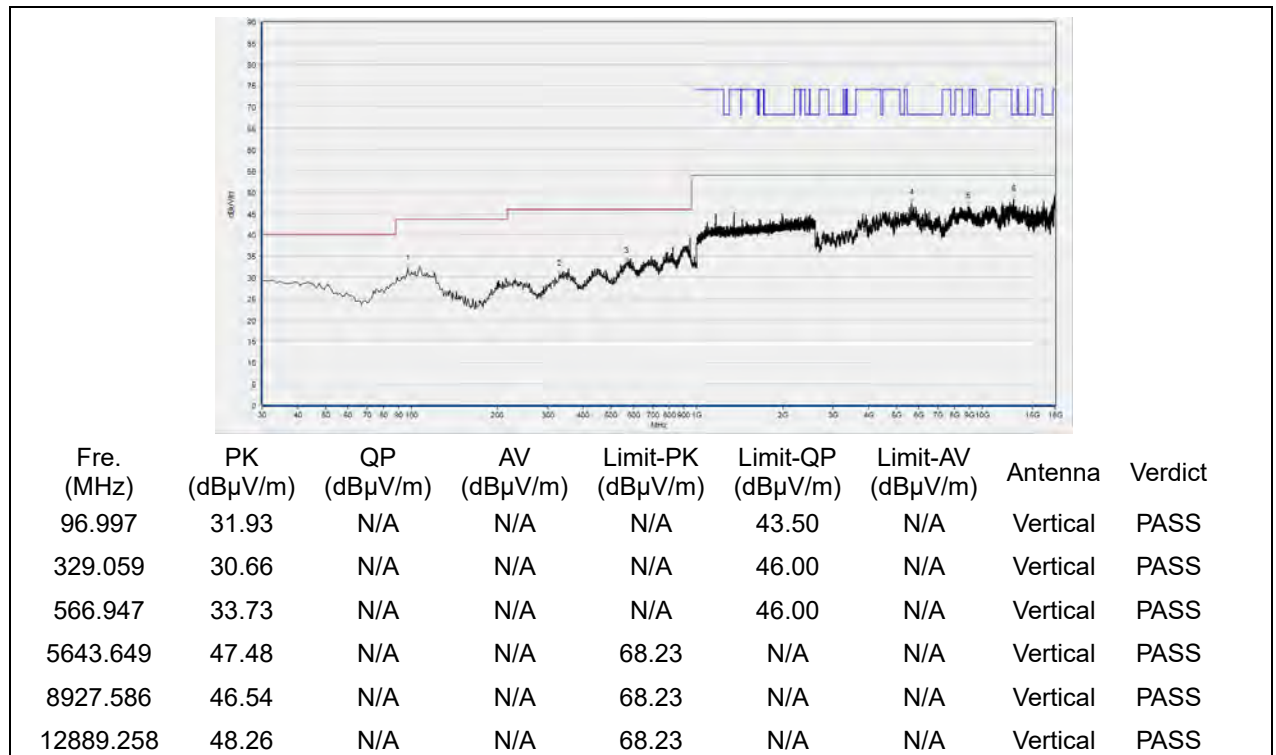


(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 151

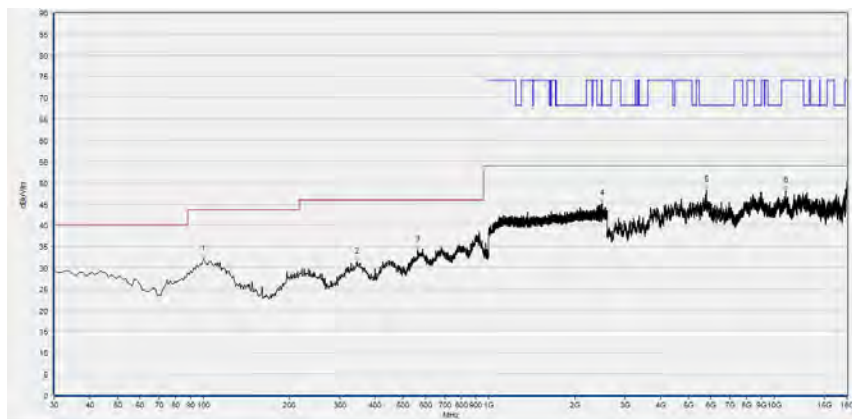


(Antenna Horizontal, 30MHz to 18GHz)



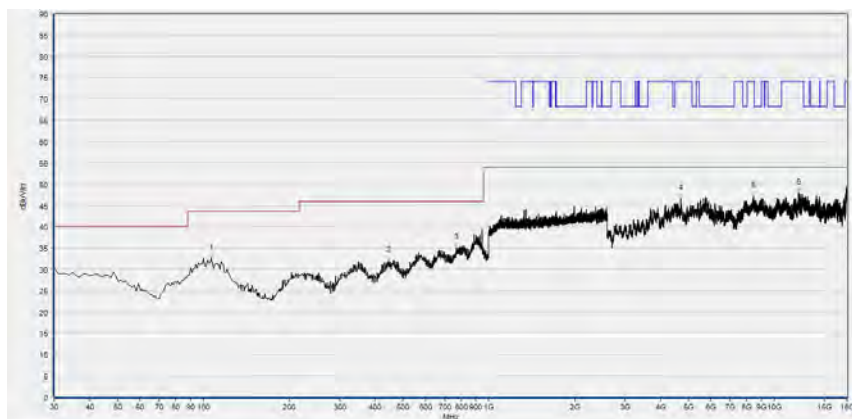
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 159



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
99.910	31.97	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
345.566	31.28	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
563.063	34.21	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
2496.499	45.14	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5776.115	48.18	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
10979.276	48.14	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

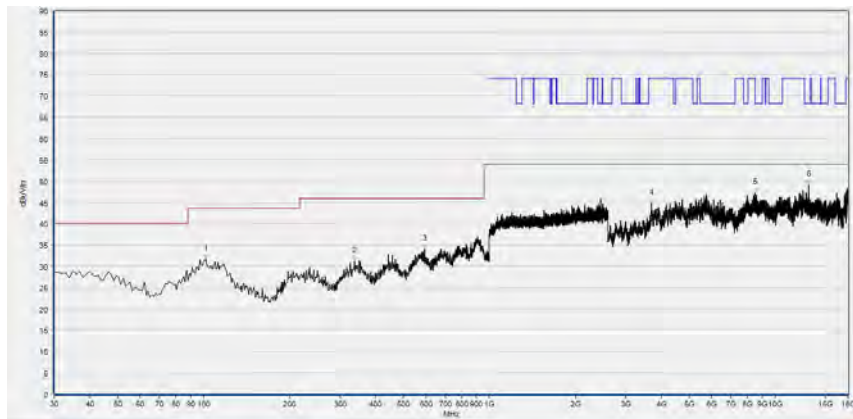


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
106.707	32.53	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
445.576	31.94	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
767.938	35.06	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
4713.303	46.58	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8480.896	47.10	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12162.232	47.86	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

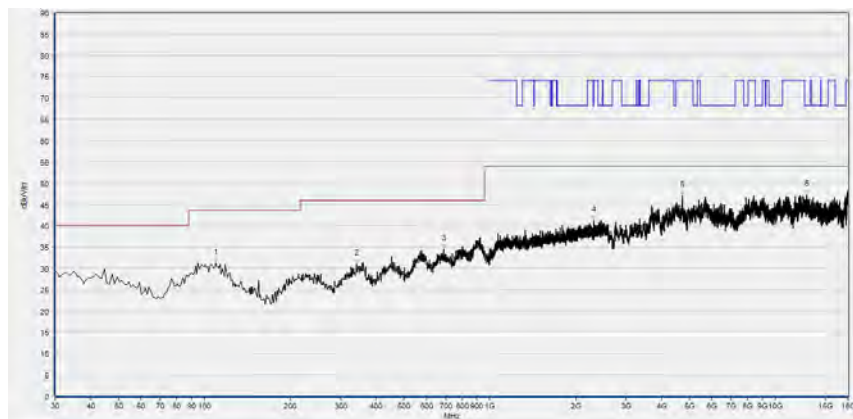
**802.11ac (VHT80) Mode**

Plot for Channel 42



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
101.852	31.71	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
336.827	31.23	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
594.134	33.97	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
3693.619	44.69	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8502.460	47.34	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
13077.175	49.05	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS

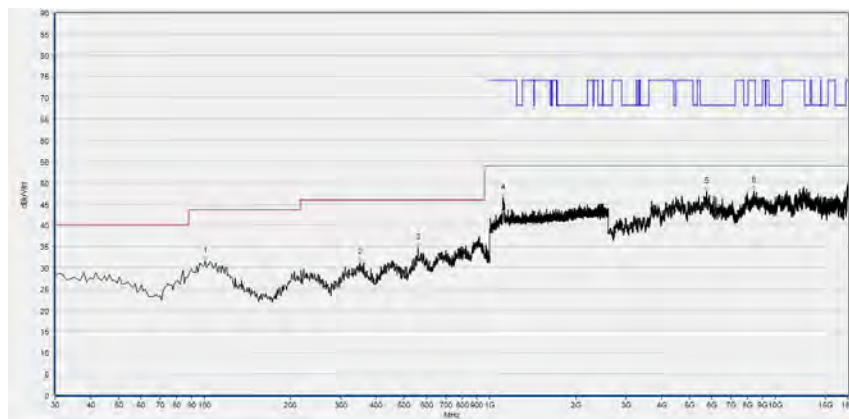
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	31.15	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
340.711	31.08	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
688.318	34.49	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2317.773	41.16	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
4737.948	47.18	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12867.694	47.30	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

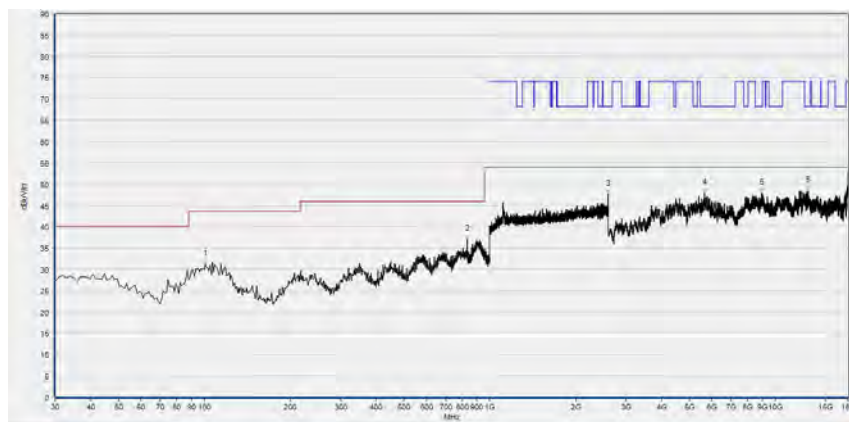
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 58



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	31.45	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
351.391	31.14	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
561.121	34.70	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
1115.238	46.34	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5739.148	47.92	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8397.720	48.16	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

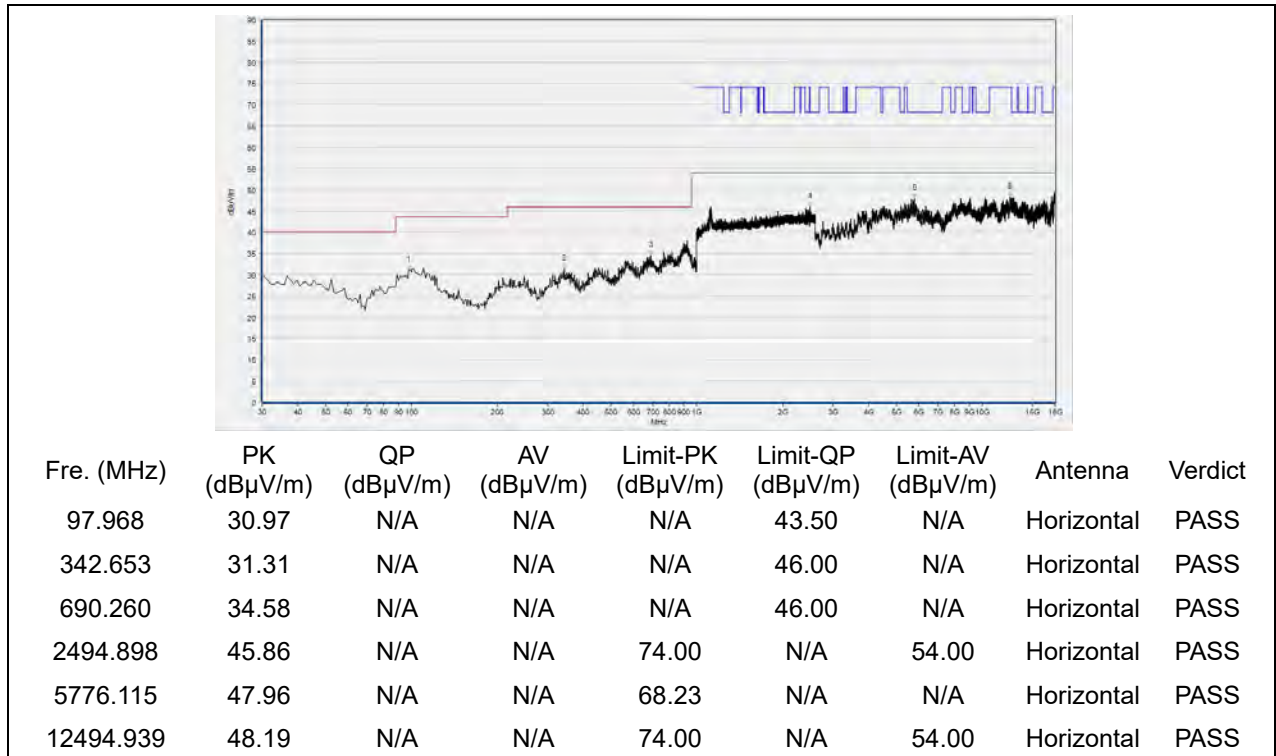
(Antenna Horizontal, 30MHz to 18GHz)



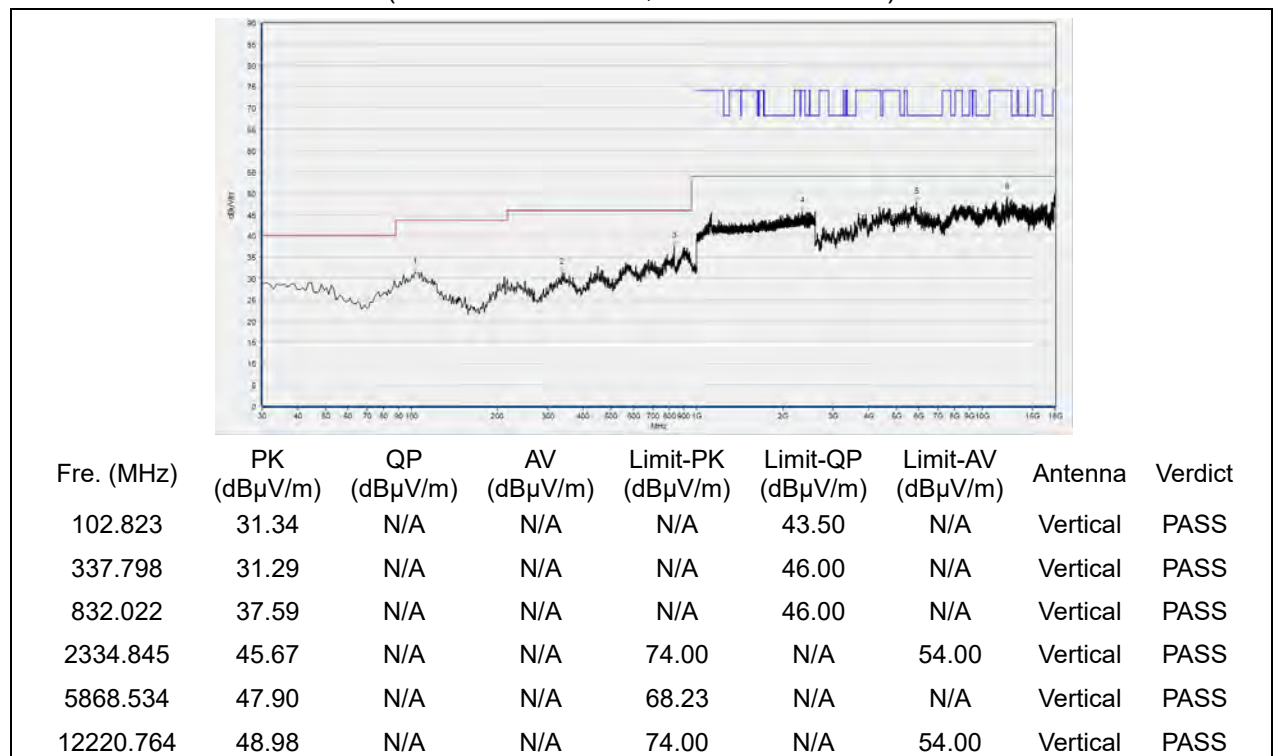
Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.881	31.19	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
832.022	37.07	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
2598.933	47.52	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
5643.649	47.87	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8961.472	47.89	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13061.772	48.37	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 106

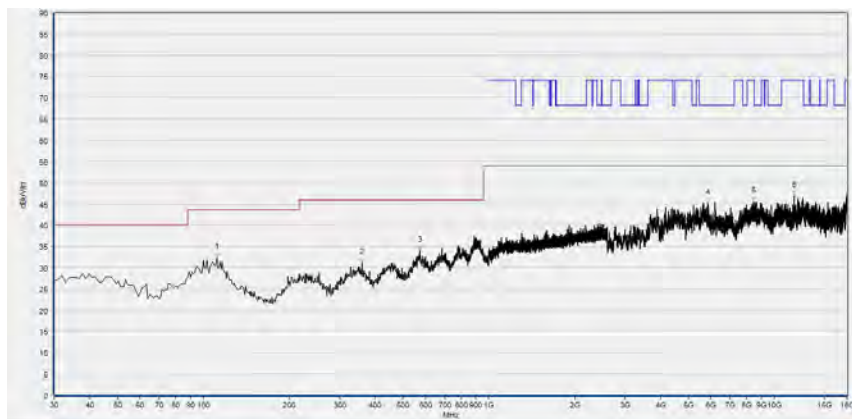


(Antenna Horizontal, 30MHz to 18GHz)



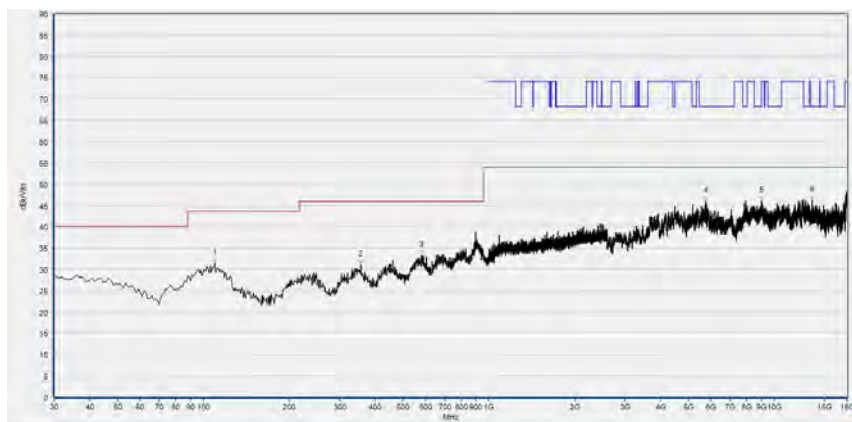
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 122



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
111.562	32.26	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
360.130	31.09	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
573.744	34.07	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5862.372	45.18	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
8440.848	45.61	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
11718.624	46.87	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

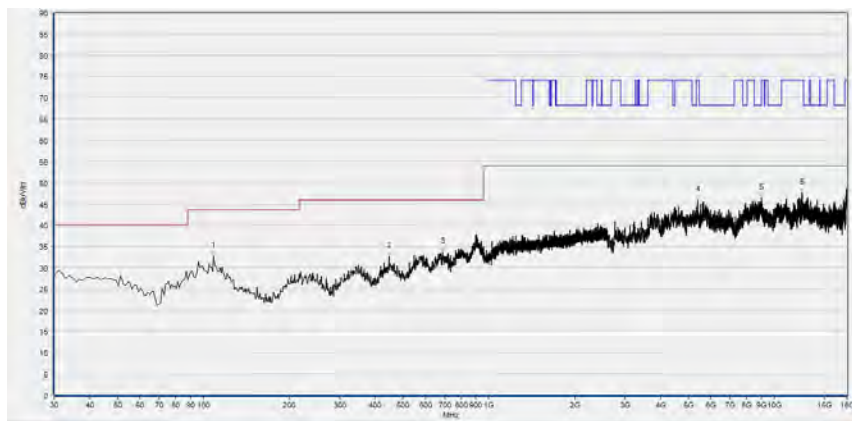
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
109.620	31.36	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
356.246	31.00	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
580.541	33.37	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5748.390	45.93	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8992.278	46.14	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
13548.510	46.30	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

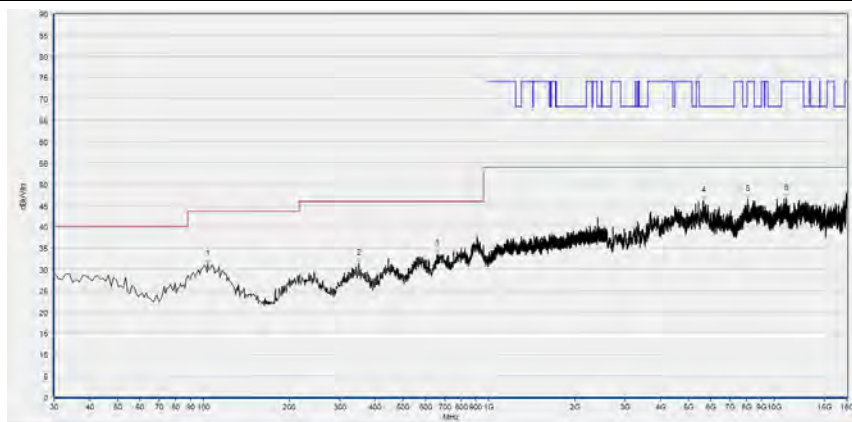
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 138



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
108.649	32.76	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
446.547	32.65	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
688.318	33.74	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5403.361	45.91	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
9013.843	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12544.229	47.59	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

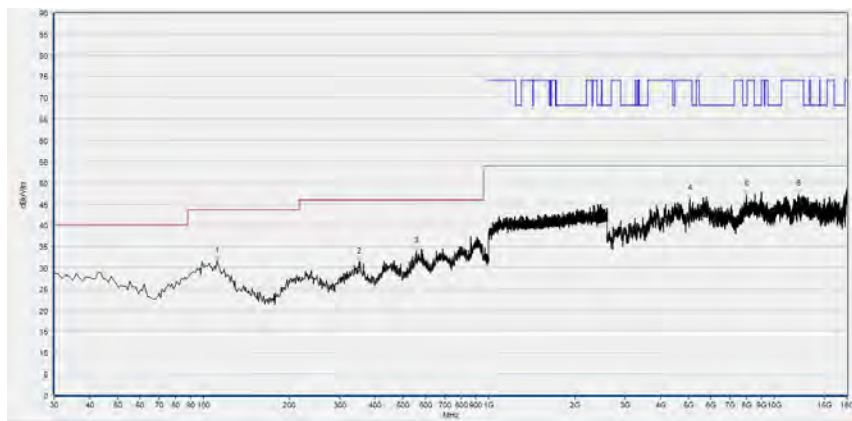
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.794	31.09	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
350.420	31.30	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
657.247	33.55	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
5640.568	46.08	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
8092.739	46.44	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11053.211	46.60	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

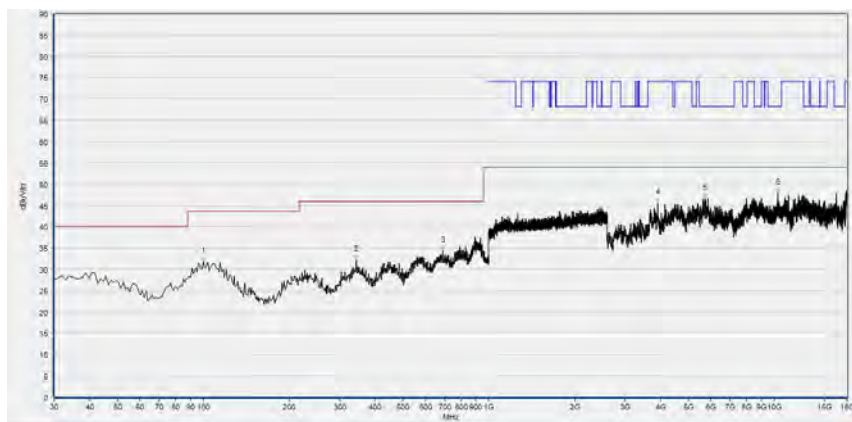
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 155



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
111.562	31.55	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
350.420	31.27	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
558.208	33.92	N/A	N/A	N/A	46.00	N/A	Horizontal	PASS
5079.896	46.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7978.756	47.05	N/A	N/A	68.23	N/A	N/A	Horizontal	PASS
12168.394	47.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
99.910	31.89	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
342.653	32.26	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
690.260	34.34	N/A	N/A	N/A	46.00	N/A	Vertical	PASS
3915.423	45.52	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5729.906	46.59	N/A	N/A	68.23	N/A	N/A	Vertical	PASS
10313.863	47.90	N/A	N/A	68.23	N/A	N/A	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)



Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Peak Output Power	$\pm 2.22\text{dB}$
Power Spectral Density	$\pm 2.22\text{dB}$
Bandwidth	$\pm 5\%$
Restricted Frequency Bands	$\pm 5\%$
Radiated Emission	$\pm 2.95\text{dB}$
Conducted Emission	$\pm 2.44\text{dB}$

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



4. Test Equipments Utilized

4.1 Conducted Test Equipments

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Attenuator 1	N/A	10dB	Resnet	N/A	N/A
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2022.03.01	2023.02.28
USB Wideband Power Sensor	MY54180008	U2021XA	Agilent	2021.10.21	2022.10.20
Temperature Chamber	12108015	DTL-003S101	YOMA	2021.10.20	2022.10.19
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Computer	T430i	Think Pad	Lenovo	N/A	N/A

4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2022.03.03	2023.03.02
LISN	812744	NSLK 8127	Schwarzbeck	2022.03.03	2023.03.02
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2022.07.06	2023.07.05
Coaxial Cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Tonscend	V2.5.77.0418
Morlab EMCR V1.2	Morlab	V1.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0

**4.4 Radiated Test Equipments**

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2022.07.06	2023.07.05
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2022.05.25	2025.05.24
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2022.02.11	2025.02.10
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2022.07.13	2025.07.12
Test Antenna – Horn	BBHA9170#773	BBHA 9170	Schwarzbeck	2022.07.14	2025.07.13
Coaxial Cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2022.07.08	2023.07.07
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2022.07.08	2023.07.07
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-5150-5350	Wainwright	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-5470-5725	Wainwright	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-5725-5850	Wainwright	2022.07.08	2023.07.07



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Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Anechoic Chamber	N/A	9m*6m*6m	CRT	2020.01.06	2023.01.05

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